













THE NEW <sup>197</sup>  
IMPERIAL ENCYCLOPEDIA  
AND  
DICTIONARY

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ABRIDGED DICTIONARY OF  
THE ENGLISH LANGUAGE  
UNDER ONE ALPHABET

RICHARD GLEASON GREENE, A.M., Editor-in-Chief  
(Formerly Editor-in-Chief of the International Cyclopedia)

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# SCHEME OF SOUND SYMBOLS

FOR THE PRONUNCIATION OF WORDS.

*Note.*—(·) is the mark dividing words respelt phonetically into syllables; (´), the accent indicating on which syllable or syllables the accent or stress of the voice is to be placed.

Sound-symbols employed in Respelling.	Representing the Sounds as exemplified in the Words.	Words respelt with Sound-symbols and Marks for Pronunciation.
<i>ā</i> ...	mate, fate, fail, aye.....	<i>māt, fāt, fāl, ā.</i>
<i>ǎ</i> ...	mat, fat.....	<i>măt, făt.</i>
<i>â</i> ...	far, calm, father.....	<i>fâr, kâm, fâ'thêr.</i>
<i>ä</i> ...	care, fair.....	<i>câr, fâr.</i>
<i>aw</i> ..	fall, laud, law.....	<i>fawl, lawd, law.</i>
<i>ē</i> ..	mete, meat, feet, free.....	<i>mēt, mêt, fêt, frê.</i>
<i>ě</i> ..	met, bed.....	<i>mět, béd.</i>
<i>é</i> ..	her, stir, heard, cur.....	<i>hêr, stêr, hêrd, kêr.</i>
<i>î</i> ..	pine, ply, height.....	<i>pîn, plî, hît.</i>
<i>ï</i> ..	pin, nymph, ability.....	<i>pïn, nïmf, ä-bïl'ï-tï.</i>
<i>ō</i> ..	note, toll, soul.....	<i>nôt, töl, söl.</i>
<i>ö</i> ..	not, plot.....	<i>nöt, plöt.</i>
<i>ô</i> ..	move, smooth.....	<i>môv, smôth.</i>
<i>ö</i> ..	Goethe (similar to <i>e</i> in her)...	<i>gö'téh.</i>
<i>ow</i> ..	noun, bough, cow.....	<i>nown, bow, kow.</i>
<i>oy</i> ..	boy, boil.....	<i>boy, boyl.</i>
<i>û</i> ..	pure, dew, few.....	<i>pûr, dû, fû.</i>
<i>ǔ</i> ..	bud, come, tough.....	<i>büd, kûm, tûf.</i>
<i>ú</i> ..	full, push, good.....	<i>fûl, pûsh, gûd.</i>
<i>ü</i> ..	French plume, Scotch guid.....	<i>plüm, güd.</i>
<i>ch</i> ...	chair, match.....	<i>chär, mäch.</i>
<i>ĉh</i> ...	German buch, Heidelberg, Scotch loch (guttural).....	<i>bóĉh, hĉh' dël-bĉhĉh, löĉh.</i>
<i>g</i> ...	game, go, gun.....	<i>gām, gō, gŭn.</i>
<i>ĵ</i> ...	judge, gem, gin.....	<i>ĵŭĵ, ĵĕm, ĵĭn.</i>
<i>k</i> ..	king, cat, cot, cut.....	<i>kĭng, kăt, kôt, kŭt.</i>
<i>s</i> ...	sit, scene, cell, city, cypress.....	<i>sĭt, sĕn, sĕl, sĭt'ĭ, sĭ'prĕs.</i>
<i>sh</i> ...	shun, ambition.....	<i>shŭn, äm-bĭsh' ŭn.</i>
<i>th</i> ...	thing, breath.....	<i>thĭng, brĕth</i>
<i>th</i> ...	though, breathe.....	<i>thō, brĕth.</i>
<i>z</i> ...	zeal, maze, muse.....	<i>zĕl, māz, mŭz.</i>
<i>zh</i> ...	azure, vision.....	<i>äzh'êr, vĭzh' ŭn.</i>



## ABBREVIATIONS USED IN THIS WORK.

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a., or adj....adjective	A.U.C.....in the year of the building of the city (Rome) [ <i>Anno Urbis conditæ</i> ]
A.B.....Bachelor of Arts	Aug.....August
abbr.....abbreviation, abbreviated	aug.....augmentative
abl. or abla.ablative	Aust.....Austrian
Abp.....Archbishop	A. V.....authorized version [of Bible, 1611]
abt.....about	avoir.....avoirdupois
Acad.....Academy	B.....Boron
acc. or ac.accusative	B.....Britannic
accom.....accommodated, accommodation	b.....born
act.....active	Ba.....Barium
A.D.....in the year of our Lord [ <i>Anno Domini</i> ]	Bart.....Baronet
Adj. ....Adjutant	Bav.....Bavarian
Adm.....Admiral	bl.; bbl....barrel; barrels
adv. or ad.adverb	B.C.....before Christ
A. F.....Anglo-French	B.C.L.... Bachelor of Civil Law
Ag.....Silver [ <i>Argentum</i> ]	B.D..... Bachelor of Divinity
agri.....agriculture	bef.....before
A. L.....Anglo-Latin	Belg.....Belgie
Al.....Aluminium	Beng.....Bengali
Ala.....Alabama	Bi.....Bismuth
Alb.....Albanian	biog.....biography,biographical
alg.....algebra	biol.....biology
A.M.....before noon [ <i>ante meridiem</i> ]	B.L.....Bachelor of Laws
A.M. ....Master of Arts	Bohem....Bohemian
Am.....Amos	bot.....botany, botanical
Amer.....America, -n	Bp.....Bishop
anat.....anatomy, anatomical	Br.....Bromine
anc.....ancient, anciently	Braz.....Brazilian
AN. M. ....in the year of the world [ <i>Anno Mundi</i> ]	Bret.....Breton
anon.....anonymous	Brig.....Brigadier
antiq.....antiquity, antiquities	Brit.....British, Britannica
aor.....aorist, -ic	bro.....brother
app.....appendix	Bulg.....Bulgarian
appar.....apparently	bush.....bushel, bushels
Apr.....April	C.....Carbon
Ar.....Arabic	c.....century
arch.....architecture	Ca.....Calcium
archæol....archæology	Cal.....California
arith.....arithmetic	Camb.....Cambridge
Ariz.....Arizona	Can.....Canada
Ark.....Arkansas	Cant.....Canterbury
art.....article	cap.....capital
artil.....artillery	Capt.....Captain
AS.....Anglo-Saxon	Card... ..Cardinal
As.....Arsenic	carp.....carpentry
Assoc.....Association	Cath.....Catholic
asst.....assistant	caus.....causative
astrol.....astrology	cav.....cavalry
astron... ..astronomy	Cd.....Cadmium
attrib.....attributive	Ce.....Cerium
atty.....attorney	Celt.....Celtic
at. wt.....atomic weight	cent.....central
Au.....Gold [ <i>Aurum</i> ]	cf.....compare [ <i>confer</i> ]
	ch or chh...church

## ABBREVIATIONS.

Chal.....	Chaldee	diff.....	different, difference
chap.....	chapter	dim.....	diminutive
chem.....	chemistry, chemical	dist... ..	district
Chin.....	Chinese	distrib....	distributive
Chron.....	Chronicles	div.....	division
chron.....	chronology	doz.....	dozen
Cl.....	Chlorine	Dr.....	Doctor
Class.....	Classical [= Greek and Latin]	dr.....	dram, drams
Co.....	Cobalt	dram.....	dramatic
Co.....	Company	Dut. or D..	Dutch
co.....	county	dwt .....	pennyweight
cog.....	cognate [with]	dynam or	
Col.....	Colonel	dyn.....	dynamics
Col .....	Colossians	E.....	Erbium
Coll.....	College	E. or e....	East, -ern, -ward
colloq.....	colloquial	E. or Eng..	English
Colo.....	Colorado	Eccl.....	Ecclesiastes
Com.....	Commodore	eccl. or } eccles....	ecclesiastical [af- fairs]
com.....	commerce, commer- cial	ed .....	
com.....	common	e.g.....	for example [ <i>ex</i> <i>gratia</i> ]
comp.....	compare	E. Ind. or {	East Indies, East E. I. .... } Indian
comp .....	composition, com- pound	elect.....	
compar....	comparative	Emp.. ...	Emperor
conch .....	conchology	Encyc.....	Encyclopedia
cong.....	congress	Eng. or E..	English
Congl.....	Congregational	engin.....	engineering
conj .....	conjunction	entom... ..	entomology
Conn or Ct.	Connecticut	env. ext....	envoy extraordinary
contr.....	contraction, con- tracted	ep.....	epistle
Cop.....	Coptic	Eph.....	Ephesians
Cor.....	Corinthians	Episc .....	Episcopal
Corn.....	Cornish	eq. or =...	equal, equals
corr.....	corresponding	equiv.....	equivalent
Cr .....	Chromium	esp.....	especially
crystal....	crystallography	Est .....	Esther
Cs .....	Cæsium	estab.....	established
ct.....	cent	Esthon....	Esthonian
Ct. or Conn.	Connecticut	etc.....	and others like [ <i>et</i> <i>cetera</i> ]
Cu.....	Copper [ <i>Cuprum</i> ]	Eth.....	Ethiopic
cwt .....	a hundred weight	ethnog....	ethnography
Cyc.....	Cyclopedia	ethnol.....	ethnology
D.....	Didymium	et seq.....	and the following [ <i>et sequentia</i> ]
D. or Dut..	Dutch	etym.....	etymology
d.....	died	Eur.....	European
d. [l. s. d.]..	penny, pence	Ex.....	Exodus
Dan.....	Daniel	exclam....	exclamation
Dan.....	Danish	Ezek.....	Ezekiel
dat .....	dative	Ezr.....	Ezra
dau.....	daughter	F.....	Fluorine
D. C.....	District of Columbia	F. or Fahr.	Fahrenheit
b. c. L.....	Doctor of Civil [or Common] Law	f. or fem...	feminine
D. D.....	Doctor of Divinity	F. or Fr....	French
Dec.....	December	fa.....	father
dec.....	declension	Fahr. or F.	Fahrenheit
def.....	definite, definition	far.....	farriery
deg.....	degree, degrees	Fe.....	Iron [ <i>Ferrum</i> ]
Del.....	Delaware	Feb.....	February
del.....	delegate, delegates	fem or f. .	feminine
dem.....	democratic	fig.....	figure, figuratively
dep.....	deputy	Fin.....	Finnish
dep.....	deponent	F.—L.....	French from Latin
dept.....	department	Fla.....	Florida
deriv.....	derivation, deriva- tive	Flem.....	Flemish
Deut.....	Deuteronomy	for.....	foreign
dial.....	dialect, dialectal	fort.....	fortification
diam... ..	diameter	Fr. or F....	French
Dic.....	Dictionary	fr.....	from

## ABBREVIATIONS.

freq.....	frequentative	ind.....	indicative
Fris.....	Frisian	indef.....	indefinite
ft.....	foot, feet	Indo-Eur...	Indo-European
fut.....	future	inf.....	infantry
G. or Ger...	German	inf or infln.	infinitive
G.....	Glucinium	instr.....	instrument, -al
Ga.....	Gallium	int... ..	interest
Ga.....	Georgia	intens.....	intensive
Gael.....	Gaelic	interj. or	
Gal.....	Galatians	int.....	interjection
gal.....	gallon	interrog...	interrogative
galv.....	galvanism, galvanic	noun	pronoun
gard.....	gardening		
gen.....	gender	intr. or	
Gen.....	General	intrans...	intransitive
Gen.....	Genesis	Io... ..	Iowa
gen.....	genitive	Ir.....	Iridium
Geno.....	Genoese	Ir.....	Irish
geog.....	geography	Iran.....	Iranian
geol.....	geology	irr.....	irregular, -ly
geom.....	geometry	Is.....	Isaiah
Ger.....	German, Germany	It.....	Italian
Goth.....	Gothic	Jan.....	January
Gov.....	Governor	Jap.....	Japanese
govt.....	government	Jas.....	James
Gr.....	Grand, Great	Jer.....	Jeremiah
Gr.....	Greek	Jn.....	John
gr.....	grain, grains	Josh.....	Joshua
gram.....	grammar	Jr.....	Junior
Gr. Brit...	Great Britain	Judg.....	Judges
Gris.....	Grisons	K.....	Potassium [ <i>Kalium</i> ]
gun.....	gunnery	K.....	Kings [in Bible]
H.....	Hegira	K.....	king
H.....	Hydrogen	Kan.....	Kansas
h.....	hour, hours	Kt.....	Knight
Hab.....	Habakkuk	Ky.....	Kentucky
Hag.....	Haggai	L.....	Latin
H. B. M.....	His [or Her] Britan- nic Majesty	L.....	Lithium
Heb.....	Hebrew, Hebrews	l. [l. s. d.], } pound, pounds or £..... } [sterling]	
her.....	heraldry	La.....	Lanthanum
herpet.....	herpetology	La.....	Louisiana
Hg.....	Mercury [ <i>Hydrar- gyrum</i> ]	Lam.....	Lamentations
hhd.....	hogshead, hogsheads	Lang.....	Languedoc
Hind.....	Hindustani, Hindu, or Hindi	lang.....	language
hist.....	history, historical	Lap.....	Lapland
Hon.....	Honorable	lat.....	latitude
hort.....	horticulture	lb.; llb. or } pound; pounds lbs..... } [weight]	
Hos.....	Hosea	Let.....	Lettish
Hung.....	Hungarian	Lev.....	Leviticus
Hydros.....	Hydrostatics	LG.....	Low German
I.....	Iodine	L.H.D.....	Doctor of Polite Lit- erature
I; Is.....	Island; Islands	Lieut.....	Lieutenant
Icel.....	Icelandic	Lim.....	Limousin
ichth.....	ichthyology	Lin.....	Linnæus, Linnæan
Ida.....	Idaho	lit.....	literal, -ly
i.e.....	that is [ <i>id est</i> ]	lit.....	literature
Ill.....	Illinois	Lith.....	Lithuanian
illus.....	illustration	lithog.....	lithograph, -y
impera or		LL.....	Late Latin, Low Latin
impr.....	imperative	LL.D.....	Doctor of Laws
impers.....	impersonal	long.....	longitude
impf or imp.	imperfect	Luth.....	Lutheran
impf. p. or		M.....	Middle
imp.....	imperfect participle	M.....	Monsieur
improp.....	improperly	m.....	mile, miles
In.....	Indium	m. or masc.	masculine
in... ..	inch, inches	M.A.....	Master of Arts
incept.....	inceptive	Macc.....	Maccabees
Ind.....	India, Indian	mach... ..	machinery
Ind.....	Indiana	Mag.....	Magazine

## ABBREVIATIONS.

Maj.....	Major	N. A., or	
Mal.....	Malachi	N. Amer.	North America, -n
Mal.....	Malay, Malayan	nat.....	natural
manuf.....	manufacturing, manufacturers	naut.....	nautical
Mar.....	March	nav.....	navigation, naval af- fairs
masc or m.	másculine	Nb.....	Niobium
Mass.....	Massachusetts	N. C. or	
math.....	mathematics, math- ematical	N. Car...	North Carolina
Matt.....	Matthew	N. D.....	North Dakota
M.D.....	Doctor of Medicine	Neb.....	Nebraska
MD.....	Middle Dutch	neg.....	negative
Md.....	Maryland	Neh.....	Nehemiah
ME.....	Middle English, or Old English	N. Eng....	New England
Me.....	Maine	neut or n...	neuter
mech.....	mechanics, mechani- cal	Nev.....	Nevada
med.....	medicine, medical	N.Gr.....	New Greek, Modern Greek
mem.....	member	N. H.....	New Hampshire
mensur....	mensuration	NHG.....	New High German [German]
Messrs. or		Ni.....	Nickel
MM.....	Gentlemen, Sirs	N. J.....	New Jersey
metal.....	metallurgy	NL.....	New Latin, Modern Latin
metaph....	metaphysics, meta- physical	N. Mex....	New Mexico
meteor....	meteorology	N. T., or	
Meth.....	Methodist	N. Test...	New Testament
Mex.....	Mexican	N. Y.....	New York [State]
Mg.....	Magnesium	nom.....	nominative
M.Gr.....	Middle Greek	Norm. F...	Norman French
MHG.....	Middle High Ger- man	North. E..	Northern English
Mic.....	Micah	Norw...	Norwegian, Norse
Mich.....	Michigan	Nov.....	November
mid.....	middle [voice]	Num.....	Numbers
Milan.....	Milanese	numis....	numismatics
mid. L. or }	Middle Latin, Me-	O.....	Ohio
ML.....	diæval Latin	O.....	Old
milit. or		O.....	Oxygen
mil....	military [affairs]	Obad.....	Obadiah
min.....	minute, minutes	obj.....	objective
mineral....	mineralogy	obs. or †	obsolete
Minn.....	Minnesota	obsoles...	obsolescent
Min. Plen..	Minister Plenipoten- tiary	O.Bulg....	Old Bulgarian or Old Slavic
Miss.....	Mississippi	Oct.....	October
ML. or }	Middle Latin, Me-	Odontog...	odontography
mid. L... }	diæval Latin	OE.....	Old English
MLG.....	Middle Low German.	OF or	
Mlle.....	Mademoiselle	O. Fr....	Old French
Mme.....	Madam	OHG.....	Old High German
Mn.....	Manganese	Ont.....	Ontario
Mo.....	Missouri	opt ..	optics, optical
Mo.....	Molybdenum	Or.....	Oregon
mod.....	modern	ord.....	order
Mont.....	Montana	ord....	ordnance
Mr.....	Master [Mister]	org.....	organic
Mrs.....	Mistress [Missis]	orig.....	original, -ly
MS.; MSS.	manuscript; manu- scripts	ornith....	ornithology
Mt.....	Mount, mountain	Os.....	Osmium
mus.....	music	OS. ....	Old Saxon
MUS.DOC...	Doctor of Music	O. T., or	
myth.....	mythology, mytho- logical	O. Test...	Old Testament
N.....	Nitrogen	Oxf.....	Oxford
N. or n....	North, -ern, -ward	oz.....	ounce, ounces
n.....	noun	P.....	Phosphorus
n or neut...	neuter	p.; pp....	page; pages
Na.....	Sodium [Natrium]	p., or part..	participle
Nah.....	Nahum	Pa. or Penn.	Pennsylvania
		paint.....	painting
		palæon....	palæontology
		parl.....	parliament
		pass.....	passive

## ABBREVIATIONS.

pathol or	pt.....past tense
path.....pathology	pt.....pint
Pb.....Lead [ <i>Plumbum</i> ]	Pt.....Platinum
Pd.....Palladium	pub.....published, publisher, publication
Penn or Pa.Pennsylvania	pwt.....penny weight
perf.....perfect	Q.....Quebec
perh.....perhaps	qt.....quart
Pers.....Persian, Persic	qtr.....quarter [weight]
pers.....person	qu.....query
persp.....perspective	q.v.....which see [ <i>quod</i> <i>vide</i> ]
pert.....pertaining [to]	R.....Rhodium
Pet.....Peter	R.....River
Pg. or Port. Portuguese	Rb.....Rubidium
phar.....pharmacy	R. Cath....Roman Catholic
PH.D.....Doctor of Philoso- phy	rec. sec....recording secretary
Phen.....Phenician	Ref.....Reformed
Phil.....Philippian	refl.....reflex
Philem....Philemon	reg.....regular, -ly
philol. ....philology, philologi- cal	regt.....regiment
philos.    { philosophy, philo- or phil... } sophical	rel. pro. or rel.....relative pronoun
phonog....phonography	repr.....representing
photog....photography	repub....republican
phren... .phrenology	Rev .. . . .Revelation
phys.....physics, physical	Rev.....The Reverend
physiol... .physiology, physi- ological	Rev. V....Revised Version
Pied.....Piedmontese	rhet.....rhetoric, -al
Pl.....Plate	R. I.....Rhode Island
pl. or plu...plural	R. N.....Royal Navy
Pl. D.....Platt Deutsch	Rom.....Roman, Romans
plupf.....pluperfect	Rom.....Romanic or Ro- mance
P.M.....afternoon [ <i>post meri-           diem</i> ]	Rom. Cath. { Roman Catholic Ch. or R. } Church C. Ch.... }
pneum....pneumatics	r.r.....railroad
P. O.....Post-office	Rt. Rev ... Right Reverend
poet.....poetical	Ru.....Ruthenium
Pol.....Polish	Russ.....Russian
pol econ...political economy	r.w.....railway
polit.....politics, political	S.....Saxon
pop... . . .population	S.....Sulphur
Port. or Pg. Portuguese	s.....second, seconds
poss.....possessive	s. [l. s. d.]..shilling, shillings
pp.....pages	S. or s.....South, -ern, -ward
pp.....past participle, per- fect participle	S. A. or S. Amer..South America, -n
p. pr.....present participle	Sam.....Samaritan
Pr. or Prov. Provençal	Sam.....Samuel
pref.....prefix	Sans, or Skr.....Sanskrit
prep.... . .preposition	Sb.....Antimony [ <i>Stibium</i> ]
Pres.....President	s.c.....understand, supply, namely [ <i>scilicet</i> ]
pres.....present	S. C. or S. Car....South Carolina
Presb.....Presbyterian	Scand.....Scandinavian
pret.....preterit	Scot.....Scotland, Scotch
prim.....primitive	scr.....scruple, scruples
priv.....privative	Scrip.....Scripture [s], Scrip- tural
prob.....probably, probable	sculp.....sculpture
Prof.....Professor	S. D.....South Dakota
pron.....pronoun	Se.....Selenium
pron.....pronunciation, pro- nounced	sec.... . . .secretary
prop.....properly	sec.....section
pros.....prosody	Sem.....Semitic
Prot. . . . .Protestant	Sep.....September
Prov. or Pr. Provençal	Serv.....Servian
Prov.....Proverbs	Shaks.....Shakespeare
prov.....province, provincial	Si.....Silicon
Prov. Eng. Provincial English	
Prus.....Prussia, -n	
Ps.....Psalm, Psalms	
psychol... .psychology	

## ABBREVIATIONS.

Sic.....	Sicilian	trigon.....	trigonometry
sing.....	singular	Turk.....	Turkish
sis.....	sister	typog.....	typography, typographical
Skr. or		U.....	Uranium
Sans.....	Sanskrit	ult.....	ultimate, -ly
Slav.....	Slavonic, Slavic	Unit.....	Unitarian
Sn.....	Tin [ <i>Stannum</i> ]	Univ.....	Universalist
Soc.....	Society	Univ.....	University
Song Sol...	Song of Solomon	U. Presb...	United Presbyterian
Sp.....	Spanish	U. S....	United States
sp. gr.....	specific gravity	U. S. A....	United States Army
sq.....	square	U. S. N....	United States Navy
Sr.....	Senior	Ut.....	Utah
Sr.....	Strontium	V.....	Vanadium
St.: Ste....	Saint	v.....	verb
St.....	street	Va.....	Virginia
stat.....	statute	var.....	variant [word]
s.T.D.....	Doctor of Sacred Theology	var.....	variety of [species]
subj.....	subjunctive	Ven.....	Venerable
suf.....	suffix	Venet.....	Venetian
Su. Goth...	Suo-Gothic	vet....	veterinary
superl....	superlative	v. i. or	
Supp.....	Supplement	v. intr....	verb intransitive
Supt.....	Superintendent	vil.....	village
surg.....	surgery, surgical	viz.....	namely, to-wit [ <i>vide-licet</i> ]
Surv.....	surveying	v. n.....	verb neuter
Sw.....	Swedish	voc.....	vocative
Swab.....	Swabian	vol.....	volume
sym.....	symbol	vols.....	volunteers
syn.....	synonym, -y	Vt.....	Vermont
Syr.....	Syriac, Syrian	v. tr.....	verb transitive
t.....	town	W.....	Tungsten [ <i>Wolfram</i> ]
Ta....	Tantalum	W.....	Welsh
Tart.....	Tartar	W. or w....	West, -ern, -ward
Te.....	Tellurium	Wal.....	Walachian
technol...	technology	Wall.....	Walloon
teleg.....	telegraphy	Wash.....	Washington
Tenn.....	Tennessee	Westph....	Westphalia, -n
term.....	termination	W. Ind.    }	West Indies, West
terr.....	territory	or W. I... }	Indian
Teut.....	Teutonic	Wis.....	Wisconsin
Tex.....	Texas	wt.....	weight
Th.....	Thorium	W. Va.....	West Virginia
theat.....	theatrical	Wyo.....	Wyoming
theol.....	theology, theological	Y.....	Yttrium
therap....	therapeutics	yd.....	yard
Thess.....	Thessalonians	yr.....	year
Ti.....	Titanium	Zech.....	Zechariah
Tim.....	Timothy	Zeph.....	Zephaniah
Tit.....	Titus	Zn.....	Zinc
Tl.....	Thallium	zool.....	zoology, zoological
toxicol....	toxicology	Zr.....	Zirconium
tp.....	township		
tr. or trans.	transitive		
transl.....	translation, translated		

See also ABBREVIATIONS: in Vol. I.



# IMPERIAL ENCYCLOPEDIA AND DICTIONARY.

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**PARAGENESIS OF MINERALS**, *pär'ä-jën'ë-sis* [Gr. *para*, side by side; *genësis*, origin, source]: a term in mineralogy applied to crystalline compounds whose mass is made up of crystals interblended in imperfect or irregular forms. **PARAGENETIC**, a. *pär'ä-jën-ët'ik*, or **PAR'AGEN'IC**, a. *-jën'ik*, applied to bodies having peculiarities of structure, character, and the like; originating at the commencement.

**PARAGLOBULIN**, n. *pär'ä-glöb'ü-lin* [Gr. *para*, beside, close to, and *globulin*]: a substance derived from the blood; a form of *globulin*.

**PARAGOGE**, n., or **PARAGOGE**, n. *pär'ä-gö'jĭ* [Gr. *paragögē*, a leading or conducting beyond—from *para*, beyond; *agō*, I lead]: the addition of a letter or syllable to the end of a word. **PAR'AGOG'IC**, a. *-gö'j'ik*, or **PAR'AGOG'ICAL**, a. *-ĭ-käl*, pertaining to the lengthening of a word by the addition of a letter or syllable.

**PARAGON**, n. *pär'ä-gön* [OF. *paragon*; F. *parangon*, a pattern or touchstone by which the goodness of things is tried—from It. *paragone*, a comparison; Sp. *paragon*, model, example: Sp. *para con*, in comparison with]: a model by way of distinction; something of superior excellence or perfection. **PAR'AGONED**, a. *-gönd*, paralleled.

**PARAGRAPH**, n. *pär'ä-gräf* [F. *paragraphe*—from mid. L. *paragraphus*—from Gr. *paragraphōs*, a mark in the margin to distinguish the divisions of a written composition—from *para*, side by side; *graphō*, I write]: a distinct part of a connected discourse or writing; the section of a chapter relating to a particular point; a short piece of news or notice in a newspaper; a mark of reference (¶). **PAR'AGRAPH'IC**, a. *-gräf'ik*, or **PAR'AGRAPH'ICAL**, a. *-ĭ-käl*, consisting of short divisions or paragraphs. **PAR'AGRAPH'ICALLY**, ad. *-lĭ*.

**PARAGRASS**: see **PIASSABA**.

## PARAGUAY.

PARAGUAY, *pâ-râ-gwî'* or *pâ'râ-gwâ*: republic of S. America. Its frontiers, previous to the war of 1865-70, were not well defined, but on its conclusion were fixed by treaty. P. now extends from 22° to 27° 35' s. lat., and from 54° 35' to 61° 40' w. long., forming the peninsula between the rivers Paraguay and Parana. It is bounded n. and n.e. by Brazil, s.e., s., and s.w. by the Argentine Confederation, and n.w. by Bolivia; area estimated 91,970 sq. m. In 1857, before the war, the pop. was estimated 1,337,439, consisting of whites of Spanish descent, native Indians, negroes, and a mixture of these several races; 1873 it had fallen to 221,079; (1899) est. 530,000, exclusive of 100,000 Indians, besides various kinds of foreigners to the number of 10,000. A mountain chain called Sierra Amambay, running in the general direction of n. to s., and bifurcating to the e. and w. toward the s. extremity, under the name Sierra Maracayu, divides the tributaries of the Parana from those of the Paraguay, none of which are very large, though they are liable to frequent and destructive overflows. The n. portion of P. is in general undulating, covered by low, gently swelling ridges, separated by large grass-plains, dotted with palms. There are mountains in the n.e. and n.w. corners. The s. portion is one of the most fertile districts of S. America, consisting of hills and gentle slopes richly wooded, of wide savannas, which afford excellent pasture-ground, and of rich alluvial plains, some of which, indeed, are marshy, or covered with shallow pools of water (only one lake, that of Ypao, deserving special notice), but a large proportion are of extraordinary fertility and highly cultivated. The banks of the rivers Parana and Paraguay are occasionally belted with forest; but, in general, the low lands are destitute of trees. The climate, for a tropical country, is temperate, the temperature occasionally rising to 100° in summer, but in winter being usually about 45°. In geological structure, the s. part belongs generally to the tertiary formation; the n. and e. presenting graywacke rocks in some districts. The natural productions are very varied, though they do not include the precious metals or other minerals common in S. America. Much valuable timber is found in the forests, and the wooded districts along the rivers possess ready means of transport. Among the trees are several species of dyewood; several trees which yield valuable juices, as the India-rubber and its cognate trees; and an especially valuable shrub, the *Maté* (q.v.), or Paraguay tea-tree, which forms one of the chief articles of commerce, being in general use throughout La Plata, Chili, Peru, and other parts of S. America. The tree grows wild in the n.e. districts, and the gathering of its leaves gives employment in the season to a large number of the native population. Many trees yield also valuable gums. Wax and honey are collected in abundance, as is also cochineal; and the medicinal plants are very numerous. The chief cultivated crops are maize, rice, coffee, cocoa, indigo, manioc, tobacco,

## PARAGUAY.

sugar-cane, and cotton. Nearly three-fourths of the land is national property, consisting partly of the lands formerly held by the Jesuit missions, partly of lands never assigned to individuals, partly of lands confiscated in the course of the revolutionary ordeal through which the country has passed. The national estates have mostly been let out in small tenements, at moderate rents. Under the dictator Francia (1814-40), agriculture made considerable progress, and the breed of cattle and horses was much improved, and the stock increased. The manufactures are sugar, rum, cotton and woolen cloths, and leather. The commerce of the country is chiefly in the hands of the government, which holds a monopoly of the export of P. tea. In 1880 the total value of exports was \$1,260,000; of imports, somewhat less. The chief exports were maté, tobacco, hides, oranges, and bark for tanning; imports, cotton goods, wine, grain, rice, linen, silk, petroleum, etc. Till the war of 1865-70, P. had no national debt, but its terrible losses compelled it then to contract obligations amounting to more than \$230,000,000. \$15,000,000 were contracted in England on the security of the public lands of P., estimated at more than \$90,000,000; but payment of interest and sinking fund ceased 1874, and prior to that was paid directly out of the capital. The military force, which, during the five years' war, was raised to 60,000 men, has now been reduced to 500. The established religion is the Rom. Cath., the ecclesiastical head of which is the bishop of Asuncion. Education is very widely diffused; and it is said that there are but few of the people unable to read and write.

The history of P. is highly interesting. It was discovered by Sebastian Cabot 1526; but the first colony was settled 1535 by Pedro de Mendoza, who founded the city of Asuncion, and established P. as a province of the viceroyalty of Peru. The warlike native tribe of the Guaranis, however, a people who possessed a certain degree of civilization, and professed a dualistic religion, long successfully resisted the Spanish arms, and refused to receive either the religion or the social usages of the invaders. In the latter half of the 16th c., the Jesuit missionaries were sent to the aid of the first preachers of Christianity in P.; but for a long time they were almost entirely unsuccessful, the effect of their preaching being in a great degree marred by the profligate and cruel conduct of the Spanish adventurers, who formed the staple of the early colonial population. In the 17th c. the home govt. consented to place in their hands the entire administration, civil as well as religious, of the province—which, from its not possessing any of the precious metals, was of little value as a source of revenue—and in order to guard the natives against the evil influences of the bad example of European Christians, gave to the Jesuits the right to exclude all other Europeans from the colony. From this time forward, the progress of civilization and Christianity was rapid.

## PARAGUAY.

The legislation, the administration, and the social organization of the settlement were shaped according to the model of a primitive Christian community, or rather of many communities under one administration; and the accounts preserved of its condition appear to present a realization of the ideal of a Christian Utopia. On the expulsion of the Jesuits from P. 1768, the history of which is involved in much controversy, the province was again made subject to the Spanish viceroys. For a time the fruits of the older civilization maintained themselves; but as the ancient organization fell to the ground, much of the work of many years was undone; the communities lapsed into disorganization, and by degrees much of the old barbarism returned. In 1776 P. was transferred to the newly formed viceroyalty of Rio de la Plata; and 1810 it joined with the other states in declaring its independence of the mother kingdom of Spain, which independence its isolated position enabled it, earliest of them all, to establish completely. In 1814 Dr. Francia (q.v.), originally a lawyer, and sec. of the first revolutionary junta, was proclaimed dictator for three years; and 1817 his term of the office was made perpetual. He continued to hold it till his death 1840, when anarchy ensued for two years; but, in 1842, a national congress elected two nephews of the dictator, Don Alonso and Don Carlos Antonio Lopez, joint consuls of the republic. In 1844 a new constitution was proclaimed, and Don Carlos was elected sole president, with dictatorial power, which he exercised till his death 1862, when he was succeeded by his son, Don Francisco Solano Lopez, whose name has become notorious in connection with the tragic struggle of 1865-70, in which the Paraguayans made a heroic but unavailing fight against the combined forces of Brazil, the Argentine Confederation, and Uruguay. The war was brought to a close by the defeat and death of Lopez at the battle of Aquidaban, 1870, Mar. 1. In 1870, June, a congress voted a new constitution, which was proclaimed Nov. 25. It is modelled on that of the Argentine Confederation, the legislative authority being vested in a congress of 2 houses, and the executive in a pres., elected for 6 years. P. was till 1876 partially occupied by Brazilian troops, and was virtually a Brazilian province.

The central dept., in which the cap., Asuncion, is situated, contains nearly one-third of the whole pop.; and the cap. itself has a population of abt. 25,000. Asuncion is connected by railway with Paraguari. The inhabitants of the towns are chiefly whites, or half-breeds, speaking Spanish. The native pop. of the provinces is chiefly Guaranis, speaking the Guarani language,

## PARAGUAY—PARAHIPPUS.

**PARAGUAY' RIVER:** important river of S. America, affluent of the Parana (q.v.), rising in the Brazilian province of Matto Grosso, on a plateau of red sandstone; lat.  $13^{\circ} 30'$  s., long. about  $55^{\circ} 50'$  w.; 9,535 ft. above sea-level. The sources of the river are a number of deep lakes, and eight m. from its source the stream already has considerable volume. After a s.w. course, through a level country covered with thick forests, the P. is joined from the w. by the Jauru, lat.  $16^{\circ} 30'$  s. It then continues to flow s. through the Marsh of Xarayes, which, during the season when the stream rises, is an expansive waste of waters, stretching far on each side of the stream, and extending n. to s. about 200 m. Thence its course is generally southward, forming from  $20^{\circ}$  to  $22^{\circ}$  s. the boundary between Brazil and Bolivia; thence flowing s.s.w. through the territories of Paraguay to its junction with the Parana, lat.  $27^{\circ} 17'$  s., a few miles above the town of Corrientés. Its chief affluents are the Cuyaba, Tacoary, Mondego, and Apa on the left, and the Jauru, Pilcomayo, and Vermejo on the right. Except in the marshy districts, the country on both banks of the river is rich and fertile, and abounds in excellent timber. The entire length of the river is estimated 1,800 m.; it is on an average about half a mile in width, and is navigable for steamers to the mouth of the Cuyaba, 100 m. above the town of Corumba. The waters of the P., which are free from obstructions, were declared open to all nations 1852; and now Brazilian mail-steamers ply monthly between Montevideo and Cuyaba, on the river of the same name, one of the head-waters of the P.; and there are several lines of steamers between Buenos Ayres and Asuncion.

**PARAGUAY TEA**, n. *pär'ä-gwī tē*: tea prepared in all parts of S. America, from the dried leaves of the Brazilian holly, *Ilex par'äguayen'sis*, ord. *Aquifoliacæ*; called also *Yerbamaté* (see **MATÉ**). **PARAGUAY'AN**, a. *-gwī'ën*, of or belonging to Paraguay.

**PARAHIBA**, *pâ-râ-ēbâ*: one of the most eastern maritime provinces of Brazil, bounded n. by Rio Grande do Norte, s. by Pernambuco, w. by Ceara, and e. by the Atlantic; 31,500 sq. m. It is traversed by the river P., by a number of smaller streams, and by mountainous ridges, between which are valleys, whose soils are mostly dry and sandy. Cotton of excellent quality, manioc, and tobacco are grown; and cotton, sugar, and timber are exported. Cap. Parahiba (q.v.).—Pop. of province (1890) 457,232.

**PARAHIBA**: town, seaport of Brazil, cap. of the province of P., and on the river of P.; about 10 m. from the sea. Besides the cathedral, it contains a number of religious houses, two colleges, and other educational institutions. The port is good for small vessels, and the coasting-trade is large.

**PARAHIPPUS**, n. *pär-a-hīp'ūs* [prefix *para-*; Gr. *hippos*, a horse]: in *paleon.*, genus of *Perissodactyle Ungulates*, from the Pliocene of North America, having affinity with the horse and tapir.

## PARAHYUS—PARALLAX.

**PARAHYUS**, n. *pär-a-hī'ūs* [prefix *para-*; Gr. *hus*, *huos*, a swine]: in *paleon.*, genus of *Suida*, from the Lower Eocene of America. It was apparently highly specialized, and, as a genus, short-lived. It attained a much greater size than the true lineal forms, and the number of its teeth was much reduced.

**PARALEIPSIS**, n. *pär'ä-līp'sīs* [Gr. *paraleip'sis*, omission—from *para*, beside; *leipō*, I leave]: in *rhet.*, a figure of speech expressing that a speaker pretends to omit or pass by something in order to enable him to mention the same with greater effect, and excite the emotion of the hearers.

**PARALIPOMENA**, n. *pär'ä-lī-pōm'ē-nä* [Gr. *paraleipom'ēna*, things omitted—from *para*, beside; *leipō*, I leave]: books of a supplementary character containing things omitted—applied to the Books of Chronicles in the Septuagint and Vulgate versions.

**PARALLAX**, n. *pär'äl-läks* [Gr. *parallax'is*, alternation, change—from *para*, beside, beyond; *allassō*, I change]: the apparent angular shifting of an object, arising from a change in the observer's point of view.—*Parallax*, in astron., is the difference between the apparent place of a heavenly body, as seen by an observer from any station, and its true position, as supposed to be seen from the centre of the earth or from the centre of the sun. When an object at M is looked at from P,



Fig. 1.

it appears in line with some object, S; but after the observer has moved to E, M has apparently retrograded to a position in line with S'; this apparent retrogression is denominated *parallax*. The angle PME is called the 'angle of parallax,' or the 'parallactic angle,' and is the measure of the amount of parallax. To astronomers, the determination of the parallax of the heavenly bodies is of utmost importance, for two reasons—first, from the necessity of referring all observations to the earth's centre, i.e., so modifying them as to make it appear as if they had been actually made at the earth's centre; secondly, because parallax is our only means of determining the magnitude and distance of the heavenly bodies. The *geocentric* or *daily* parallax—as the apparent displacement of a heavenly body, due to its being observed from a point on the surface of the earth, instead of from its centre, is called—is determined as follows: Let P and P' be two stations on the surface of the earth (fig. 2), E its centre, M the object to be observed, and Z and Z' the zeniths respectively of the observers at P and P' (points which, if possible, should be on the same meridian exactly); then at P and P' let the *zenith distances*, ZPM and Z'P'M, be observed simulta-

## PARALLAX.

neously, and since the latitudes of P and P', and consequently their difference of latitude, or the angle PEP', are known, from these three the angle PMP' (the sum of the parallaxes at P and P') is at once found; and then, by a trigonometrical process, the separate angles or parallaxes PME and P'ME. When the parallax of M, as

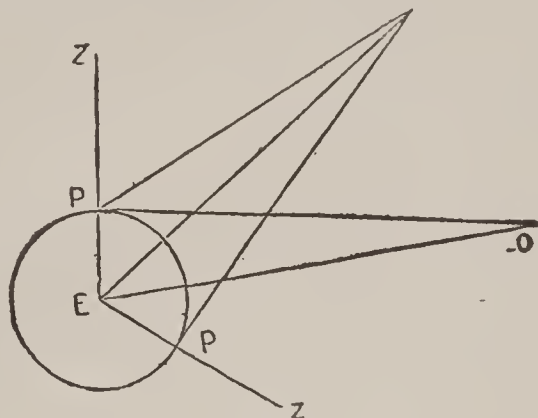


Fig. 2.

observed from P, is known, its distance from E, the centre of the earth, can be at once found. When the heavenly body is on the horizon, as at O, its parallax is at a maximum, and is known as a *horizontal* parallax. The geocentric parallax is of use only in determining the distances of those heavenly bodies at which the earth's radius subtends a considerable angle; and as the moon and Mars (when in opposition) are the only such bodies, the parallax of the other celestial bodies must be determined in a different manner. The parallax of the Sun (q.v.) is found by observation of the *transit* of Venus across his disk—a much more accurate method than that above described. The parallaxes of the other planets are easily determined from that of Mars.

In the case of the fixed stars, at which the earth's radius subtends an infinitesimal angle, it becomes necessary to make use of a much larger base-line than the earth's radius, and as the largest we can employ is the radius of the earth's orbit, it accordingly is made use of, and the displacement of a star, when observed from a point in the earth's orbit, instead of from its centre, the sun, is called the *annual* or *heliocentric* parallax. Here the base-line, instead of being, as in the former case, 4,000 m., is about 92,000,000 m.; and the two observations necessary to determine the parallactic angle are made from two points on opposite sides of the earth's orbit, at an interval as nearly as possible of half a year. Yet, notwithstanding the enormous length of the base-line, it bears so small a proportion to the distances of the stars, that only in three or four cases have they been found to exhibit any parallactic motion whatever, and in no case does the angle of parallax amount to 1" (see STARS). The geocentric horizontal parallax of the moon is about 57' 4"·2; that of the sun, about 8"·6; and of the double star, 61 *Cygni*, the heliocentric parallax has been determined by Bessel to be ·348", equivalent to

## PARALLEL.

about 15-millionths of a second of geocentric horizontal parallax. Parallax affects every observation of angular measurement in the heavens, and all observations must be corrected for parallax, or, in astronomical phrase, referred to the earth's centre, before they can be made use of in calculation. The position of a body when noted from the surface of the earth is called its *apparent* position; and when referred to the centre, its *real* position. PAR'ALLAC'TIC, a. -lăk'tik, or PAR'ALLAC'TICAL, a. -tĭ-kăl, pertaining to the parallax of a heavenly body.

PARALLEL, a. păr'ăl-lĕl [Gr. *parallēlos*, beside each other, equidistant—from *para*, side by side, as if for comparison; *allēlon*, one another: L. *parallēlus*: F. *parallele*]: lying side by side, and having always an equal distance from one another; having the same direction; equal in all essential points; like; similar: N. a line which is equidistant from another line throughout its whole length; a line on the globe marking latitude; anything equal to another in all essential particulars; resemblance; a comparison made: V. to place or set so as to be parallel; to equal; to resemble; to compare. PAR'ALLELING, imp. PAR'ALLELED, pp. -lĕld. PAR'ALLELLELY, ad. -lĭ. PAR'ALLELISM, n. -ĭzm, state of being parallel; resemblance; comparison; in *Heb. poetry*, the correspondence of two successive lines. PARALLEL SAILING, sailing on a parallel of latitude. PARALLEL LINES, or PARALLELS, in *milit.*, trenches cut in the ground before a fortress, roughly parallel to its defenses, to give cover to the besiegers from the guns of the place. The Parallels are usually three, with zigzag trenches leading from one to another. The old rule used to be to dig the first at 600 yards distance, but the improvements in artillery have rendered a greater distance necessary; and at Sebastopol, the allies made their first trench 2,000 yards from the walls. The third trench is very near to the besieged works, and from it saps and zigzag approaches are directed to the covert-way.—The bearing of Parallels in the general conduct of a SIEGE will be found described under that head. PARALLEL ROD, in a *locomotive-engine*, a rod that connects the crank-pins of the driving-wheels. PARALLEL RULER, a mathematical instr. formed by two equal rulers united by two cross-bars of equal length and movable. PARALLEL MOTION, in the *steam-engine*, a contrivance which converts a circular motion into a rectilinear one. PARALLEL SPHERE, in *geog.*, that position of the sphere in which the equator coincides with the horizon, and the poles are in the zenith and nadir, being the appearance that the sphere would have to a spectator placed at the pole. PARALLEL FORCES, in *mech.*, forces which act in directions parallel to each other (see below). PARALLELS OF ALTITUDE, small circles of the sphere parallel to the horizon. PARALLELS or CIRCLES OF LATITUDE, in *geog.*, circles drawn round the surface of the earth parallel to the equator. They may be supposed to be the intersections with the



## PARALLELEPIPED—PARALLEL FORCES.

earth's surface of planes which cut the earth at right angles to its axis. The greatest of these circles is the equator, which has the centre of the earth for its centre, the radius for its radius, and is equally distant at all points from each pole. It is evident that, of the others, those next the equator are greater than those more remote, and that they become less and less, till at the poles they vanish altogether. The radius of any one circle is evidently equal to the earth's radius multiplied into the cosine of its latitude or distance from the equator. The rotary velocity of the earth's surface, about  $17\frac{1}{3}$  m. per minute at the equator, is only  $8\frac{2}{3}$  m. in lat.  $60^\circ$ ; in lat.  $82\frac{1}{2}^\circ$  (most northerly point yet reached) is only  $2\frac{1}{4}$  m.; and in lat.  $89\frac{1}{2}^\circ$  (within 35 m. of the pole) is not more than 267 yards per minute. The most important parallels of latitude are the *Tropics of Cancer* ( $23^\circ 28'$  n. lat.) and *Capricorn* ( $23^\circ 28'$  s. lat.), and the *Arctic* ( $66^\circ 32'$  n. lat.) and *Antarctic Circles* ( $66^\circ 32'$  s. lat.). Parallels in *astron.* are circles drawn parallel to the ecliptic. PARALLELS OF DECLINATION, in *astron.*, circles of the sphere parallel to the equator. PARALLEL COPING, coping of equal thickness throughout.

PARALLELEPIPED, n. *pär'äl-lël-ë-pīp'ëd* (erroneously written *Parallelopiped*), or PAR'ALLELEPIP'EDON, n. *-pīp'ë-dōn* [Gr. *parallēlos*, beside each other, equidistant; *epipēdos*, on the ground, or on a level with it]: oblong solid figure, having six faces, the faces being invariably parallelograms, and any two opposite faces equal, similar, and parallel. If the faces are all squares, and consequently equal, the P. becomes a cube. The volume of a P. is found by multiplying the area of one face by its distance from the opposite one.

PAR'ALLEL FORCES: forces which act on a body in directions parallel to each other. Every body, being an assemblage of separate particles, each of which is acted on by gravity, may thus be considered as impressed upon by a system of parallel forces. The following demonstration exhibits the mode in which the amount and position of the resultant force are found: Let P and Q be two parallel forces acting at the points A and B respectively, either in the same (fig. 1) or in opposite (fig. 2) directions;

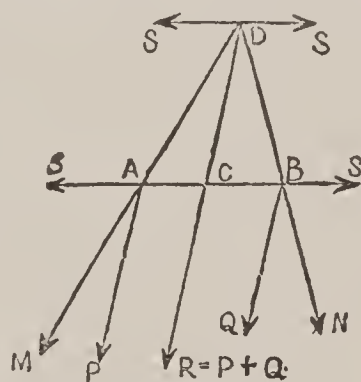


Fig. 1.

join AB, and in this line, at the points A and B, apply the equal and opposite forces S and S, which counterbalance each other, and therefore do not affect the system. Find M and N (see COMPOSITION AND RESOLUTION OF FORCES), the resultants of P and S, and Q and S, respectively, and produce their directions till they meet in D, at which point let the resultants be resolved parallel to their original directions; then there are two equal

## PARALLEL FORCES.

forces,  $S$  and  $S$ , acting parallel to  $AB$ , but **in opposite directions**, and thus, as they counterbalance each other, they may be removed. There then remain two forces,  $P$  and  $Q$ , acting at  $D$ , in the line  $DC$ , parallel to their original directions; and their sum (fig. 1) or difference (fig. 2), represented by  $R$ , is accordingly the resultant of

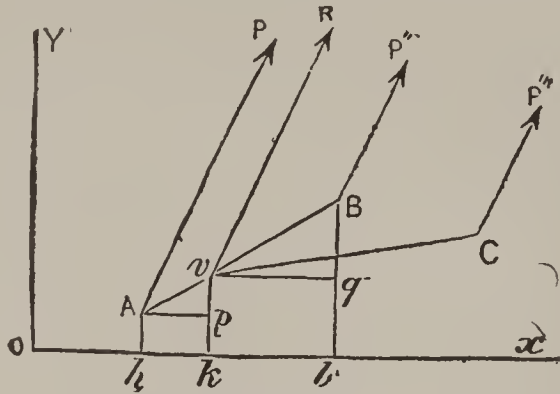


Fig. 2.

the original forces at  $A$  and  $B$ . To find the position of  $C$ , the point in  $AB$ , or  $AB$  produced, through which the resultant passes, it is necessary to make use of the well-known property denominated the *Triangle of Forces* (q.v.), according to which the three forces  $S$ ,  $M$ , and  $P$  are proportional to the lengths of  $AC$ ,  $AD$ ,  $DC$ , the sides of the triangle  $ADC$ ; then  $S : P :: AC : CD$ , similarly  $Q : S :: DC : CB$ , therefore  $Q : P :: AC : BC$ , and  $Q \perp P$  or  $R : P :: AC \perp BC$  or  $AB : BC$ , from which proportions we derive the principle of the lever,  $P \times AC = Q \times BC$ , and also that  $R \times BC = P \times AB$ , whence  $BC = \frac{P}{R} \times AB$ , and the point  $C$  is found. The failing case of this proposition is when  $P$  and  $Q$  acting in opposite parallel directions at

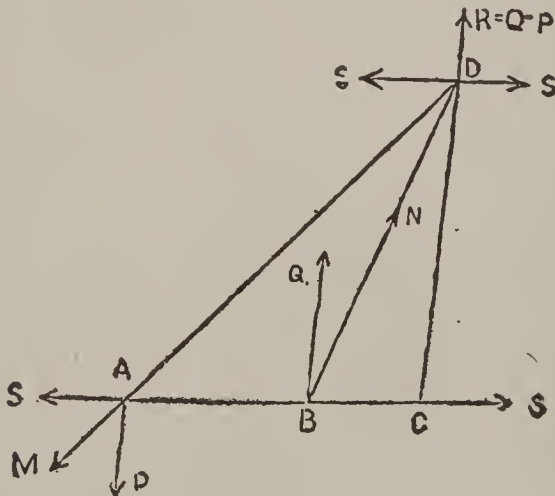


Fig. 3.1

different points are equal, in which case the resultant  $R = Q - P = Q - Q = 0$ . In all other cases there is a progressive motion, such as would be caused by the action of a single force  $R (= Q \perp P)$  acting at the point  $C$  in the direction  $CR$ ; but in the failing case, since  $R = 0$ , there is no progressive motion, but a rotatory movement round the

## PARALLELOGRAM—PARALOGIZE.

centre of AB. See COUPLE. It is of no consequence whether A and B be the true points of application of the forces P and Q, provided their directions when produced pass through these points; and the point of application of the resultant need not be in the line joining the points of application of the component forces, but its direction must when produced pass through C. If there be more than two parallel forces, the resultant of the whole is found by compounding the resultant of the first two with the third in the way given above, thus obtaining a new resultant, which is similarly combined with the fourth force; and so on till the final resultant is found. The centre of gravity is only a special name for the point of application of the final resultant of a number of parallel forces.

PARALLELOGRAM, n. *pär'äl-lël'ō-grām* [Gr. *paralēlos*, equidistant; *gramma*, a writing or drawing]: in *geometry*, four-sided rectilinear figure which has its opposite sides parallel; the opposite sides are therefore equal, and so are the opposite angles. If one angle of a P. be a right angle, all its angles are right angles, and the figure is then called a *rectangular parallelogram*, or, shortly, a *rectangle*; and if at the same time all the sides are equal, the figure is a *square*, otherwise it is an *oblong*. If the angles are not right angles, but all the sides are equal, it is called a *rhombus*; and if the opposite sides only are equal, a *rhomboid*. The two lines which connect the opposite corners of a P. are called its *diagonals*; each bisects the P., and they bisect each other; the sum of their squares also is equal to the sum of the squares of the sides of the parallelogram.

All parallelograms which have equal bases and equal altitudes are equal in area, whether they be similar in shape or not, and the area of a P. is found by multiplying its base by the height.

PARALLEL'OGRAM OF FOR'CES: see COMPOSITION AND RESOLUTION OF FORCES.

PARALOGIZE, v. *pä-räl'ō-jîz* [Gr. *para*, beyond; *logismos*, reasoning]: to reason falsely. PARAL'OGIZING, imp. PARAL'OGIZED, pp. *-jîzd*. PARAL'OGISM, n. *-jîzm*, a conclusion not warranted by the premises; false arguments. PARAL'OGY, n. *-jî*, false reasoning.

## PARALYSIS.

**PARALYSIS**, or **PALSY**: loss, more or less complete, of the power of motion; but by some writers the term is employed to express also loss of sensation. When the upper and lower extremities on both sides, and more or less of the trunk, are involved, the affection is termed *General Paralysis*. Very frequently only one-half of the body laterally is affected, the other side remaining sound; to this condition the term *Hemiplegia* is given. When the P. is confined to all the parts below an imaginary transverse line drawn through the body, or to the two lower extremities, the condition is termed *Paraplegia*. When one part of the body, as a limb, one side of the face, etc., is exclusively attacked, the affection is known as *local palsy*. In some cases the loss of sensation and the power of motion in the paralyzed part is entire; in others it is not so: in the former the P. is said to be *complete*; in the latter, *partial*. In most cases, but not invariably, sensibility and motion are simultaneously lost or impaired. When motion is lost, but sensation remains unimpaired, the affection has received the name of *akinesia* [Gr. *a*, not, and *kinēsis*, motion]. More rarely, there is loss of sensibility while the power of motion is retained; and to such cases the term *anesthesia* [Gr. *a*, not, and *aisthesis*, sensation] is applied. This affection occurs most frequently in the organs of sense, e.g., in the tongue, in which the sense of taste may be lost, without any defect of movement.

P. is in most cases a mere symptom of disease existing in some other part than that apparently affected, e.g., in the brain or spinal cord, or in the conducting nerves between either of these organs and the palsied organ. Sometimes, however, it is a purely local affection, depending on a morbid condition of the terminal extremities of the nerves. The varieties in the condition of the brain and spinal cord which occasion P. are somewhat numerous, e.g., congestion, hemorrhagic and serous effusion, softening, fatty degeneration, fibrinous exudation, suppuration, hydatids, various morbid growths, depressed bone from external violence, etc. It is highly probable, also, that P. may result sometimes from mere functional disorder of the nervous centres—a view confirmed by the fact that a *post mortem* examination of a patient who has suffered from this affection sometimes fails to detect any apparent lesion. P. may originate in a nervous trunk, if it is compressed by a tumor, or otherwise mechanically affected, or if it is the seat of morbid action tending in any way to disorganize it; or it may be due to an abnormal condition of the terminations of the nerves, which may be rendered unfit for receiving impressions, either from the external world or from the brain, by prolonged disuse, by continuous or severe pressure, by exposure to cold, by disorganization of their own tissue, or by the depressing action of various metallic poisons, especially lead.

The symptoms and causes of the most important forms of P. are, in brief, as follows: *Hemiplegia* [Gr.

## PARALYSIS.

*hemi*, half; *plēssō*, I strike] affects one *lateral half* of the body, and is that form of P. to which the term *paralytic stroke* is commonly applied. The parts generally affected are the upper and lower extremities, the muscles of mastication, and the muscles of the tongue on one side. In a well-marked case the patient when seized falls to the ground, all power of motion in the affected arm and leg being lost. The P. of the face which accompanies hemiplegia is usually quite distinct from the affection known as *facial palsy*, which is an affection of the facial nerve or *portio dura*: see NERVOUS SYSTEM. It is the motor branches of the fifth or trifacial nerve going to the muscles of mastication which are generally involved in hemiplegia; consequently the cheek is flaccid and hangs down, and the angle of the mouth is depressed on the affected side. The tongue when protruded points toward the paralyzed side, and there is often imperfect articulation, in consequence of the lesion commonly affecting the hypoglossal nerve. Hemiplegia may arise from lesions of various kinds—e.g., (1) from hemorrhage, or some other morbid change in the brain, in which case the P. is on the side of the body opposite to the lesion, in consequence of the decussation or crossing over of nervous fibres from one side to the other that occurs at the upper part of the Spinal Cord (q.v.); (2) from spinal disease below the point of decussation above noticed; in this case the P., and the lesion causing it, are on the same side of the body. It is also sometimes associated with hysteria, epilepsy, and chorea, but in these cases it usually disappears in a few hours.

*Paraplegia* is usually confined to the two lower extremities, but the muscles of the lower part of the trunk and of the bladder and rectum are sometimes affected. There are at least two distinct forms of paraplegia: (1) Paraplegia dependent on primary disease of the spinal cord or its membranes, especially on Myelitis (q.v.); (2) Reflex Paraplegia, i.e., paraplegia consequent on disease of the kidneys, bladder, urethra, prostate, womb, etc. These two forms of paraplegia differ in many of their phenomena, and the most important of these points of difference have been arranged in a tabular form by Dr. Brown-Séquard in *Lectures on Paralysis of the Lower Extremities*, which give the best information on this form of palsy. Paraplegia usually comes on slowly, with gradual increase of its symptoms. The reflex form is, of course, by far the most favorable, as it usually abates spontaneously on the subsidence of the primary disease.

*Facial palsy*, though locally affecting only a small part of the body, is a disorder of sufficient importance to require definite notice. In this affection there is more or less perfect loss of power over all the muscles supplied by the *portio dura*, or facial nerve. The following graphic account of the appearance of the patient is condensed from Dr. Watson's *Lectures on the Practice of*

## PARALYSIS.

*Physic*: From one-half of the countenance all power of expression is gone; the features are blank, still, and unmeaning; the eyelids apart and motionless. The other half retains its natural cast, except that, in some cases, the angle of the mouth on that side seems drawn a little awry, in consequence of the want of counterpoise from the corresponding muscular fibres of the palsied side. The patient cannot laugh, or weep, or frown, or express any feeling or emotion, with one side of his face, while the features of the other may be in full play; nor can he spit or whistle properly. One-half of the aspect, with its unwinking eye, its fixed and solemn stare, might be that of a dead person; the other half is alive and merry. To those who do not comprehend the possible extent of the misfortune, the whimsical appearance of the patient is a matter of mirth and laughter; while, on the other hand, his friends imagine that he has had a 'stroke,' and that he is in a very dangerous state. The nerve may be unable to discharge its duties in consequence of disease within the cavity of the skull, and in that case there is very serious danger; but in the great majority of cases the nervous function is interrupted in that part of the *portio dura* which lies incased in the temporal bone, or in the more exposed part which issues in front of the ear; and hence this form of P. is generally unattended with any danger to life. It may arise from various causes. Sometimes it is the consequence of mechanical violence, sometimes of the pressure of tumors in the region of the parotid gland, and it very frequently arises from the mere exposure of the side of the face for some time to a stream of cold air.

It remains to notice certain kinds of P. which differ either in their characters, or in their causes, from those above described—viz., *Shaking Palsy*, or *Paralysis Agitans*; and the palsies induced by various poisons. *Shaking Palsy* has been defined as 'involuntary tremulous motion, with lessened muscular power in parts not in action, and even when supported; with a propensity to bend the trunk forward, and to pass from a walking to a running pace; the senses and intellect being uninjured.' It is an affection chiefly of old age, and often goes no further than to cause an unceasing nodding and wagging of the head in all directions. Somewhat analogous to this form of P. is that peculiar kind of trembling often noticed in persons much exposed to the vapor of mercury—*Mercurial Tremor*, as it is termed by the physicians, and *The Trembles*, as the patient usually calls it. It consists in convulsive agitation of the voluntary muscles, especially when an attempt is made to cause them to act under the influence of the will; a patient with this affection walks with uncertain steps, his limbs trembling and dancing as if they had been hung upon wires. When sitting down he exhibits little or no indication of his disease, but on rising he cannot hold his legs steady, nor direct them with precision; and in severe cases he falls to the ground if not supported.

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The arms are similarly agitated, and the tongue is usually so tremulous as to render the articulation hurried and unnatural. The disease is especially common in artisans employed in the gilding of metals, particularly of silver, by means of heat; it is also frequent among workmen of quicksilver mines in which the crude metal is purified by heat. The time required for the production of the disease varies extremely in different cases (according to Dr. Watson, from 2 to 25 years). The duration of the complaint is considerable; it may last two or three months, or longer, but it is seldom fatal.

For the palsy arising from the absorption of lead, see LEAD-POISONING.

A specific form of P. of the lower extremities, consequent on the use of flour from the beans of the *Lathyrus sativus*, is common in certain parts of India and in Tibet. The ripe bean is an ordinary article of food when made into flour, but it is used generally with wheat or barley flour; it is only when it exceeds one-twelfth part that it is at all injurious, and when it exceeds one-third that the P. sets in. Other species of *Lathyrus* have been known occasionally to induce similar symptoms in European countries.

Hemiplegia and paraplegia are serious affections, whose treatment should be exclusively restricted to the physician. When a patient has an attack of hemiplegia (or a *paralytic stroke*), all that should be done before the physician arrives is to place him in a horizontal position, with the head slightly raised, and to remove any impediments presented by the dress to the free circulation of the blood. Should the physician not arrive in an hour or two, it may be expedient to give the patient a sharp purge, if he can swallow, and, without waiting for its action, to administer an injection (or clyster) consisting of half an ounce of oil of turpentine suspended (by rubbing it with the yolk of an egg) in half a pint of thin gruel; and cold lotions may be applied to the head, especially if its surface be hot. The question of blood-letting—formerly the universal treatment—must be left solely to the physician. It should, however, be generally known, that if the patient be cold and collapsed; if the heart's action be feeble and intermittent; if there be an anæmic state; if the patient be of advanced age; if there be evidence of extensive disease of the heart or arterial system; or lastly, if there be reason, from the symptoms, to believe that a large amount of hemorrhage has already taken place in the brain—these singly, and, *a fortiori*, conjointly, are reasons why blood should not be abstracted.

Facial palsy, unless the seat of the disease be within the cavity of the cranium, will usually yield in the course of a few weeks to cupping and blistering behind the ear of the affected side, purgatives, and such other remedies as the physician will prescribe. Exposure to cold air must be carefully avoided during treatment.

Little or nothing can be done to cure *Paralysis Agitans*. In the treatment of *Mercurial Tremor*, the first step is to

## PARALYZE—PARAMARIBO.

**remove** the patient from the further operation of the poison; the second is to remove the poison already absorbed into the system, which is effected by the administration of iodide of potassium. This salt combines with the metallic poison in the system, and forms a soluble salt (a double iodide of mercury and potassium), which is eliminated through the kidneys. Good food and tonics (steel or quinia, or the two combined) should be at the same time freely given.

In the paralysis produced by the use of *Lathyrus sativus*, cases are reported which seem to have been benefited by good diet, tonics, strychnia, and application of blisters to the loins.

**PARALYZE**, *v.* *pär'ä-liz* [Gr. *paralúsis*, a loosening at the side, palsy—from *para*, beside; *luō*, I loose]: to deprive of strength, whether of body or mind; to strike or affect as with palsy; to unnerve; to make useless. **PAR'ALYZING**, *imp.* **PAR'ALYZED**, *pp.* *-lized*. **PARALYSIS**, *n.* *pä-räl'i-sis*, palsy; loss of the power of bodily motion or sensation (see above). **PARALYTIC**, *n.* *pär'ä-lit'ik*, a person affected with paralysis. **PAR'ALYTIC**, *a.* *-i-käl*, affected with or inclined to paralysis.

**PARAMAGNETIC**, *a.* *pär'ä-mäg-nët'ik* [Gr. *para*, beyond; *magnēs*, a magnet]: a term applied to bodies which are attracted by a magnet; magnetic, as opposed to diamagnetic. **PAR'AMAGNETISM**, *n.* *-mäg'në-tizm*, magnetism, as opposed to Diamagnetism (see under **DIAMAGNETIC**).

**PARAMARIBO**, *pär-a-mär'i-bō*: city, capital of Dutch Guiana, on the w. bank of the river Surinam, about 20 m. from its mouth; 5° 45' n. lat., and 55° 13' w. long. Pop. (1854) about 18,000; (1869) 20,373; (1890) 28,831. It forms a rectangle of nearly a mile and a half in length by three-quarters in breadth. The streets are broad, covered with shell-sand, and planted on both sides with orange, lemon, tamarind, and other trees. Near the river, the houses, chiefly of wood, stand somewhat closely together, but in the remoter parts each is surrounded by its garden. The rooms are wainscoted with the choicest woods, and elegantly furnished. In approaching P. from the sea, Fort Zeelandia is first reached; then the bureau of finance and court of justice on the Government Plain, which is surrounded by stately cabbage-palms; the governor's house, with shady double avenue of tamarind-trees; lastly, the business streets, stretching along the riverside. There are a Dutch Reformed, Lutheran, Moravian, two Rom. Cath. churches, and two synagogues. Fort Zeelandia has a large and beautiful barrack, with several roomy houses for the officers. P. has a neat, pleasant, and picturesque appearance—the white-painted houses, with bright-green doors and windows, peeping out from the shady trees, and the river thronged with the tent-boats and canoes constantly arriving and departing.

**P.** is the only port, except Nickerie Point, at the mouth.



## PARAMATTA.

of the Corentyn. 1870-80 the number of ships entering the ports of Dutch Guiana varied from 190 to 230 a year, and the tonnage from 20,000 to 25,000 tons: by far the largest number were British. About a fourth part cleared at Nickerie, a very productive portion of the colony, in which sugar, molasses, and rum are manufactured in large quantities. The Bank of Surinam (cap. \$400,000), the only one in the colony, has its headquarters at Paramaribo. The climate of Dutch Guiana is not healthful. From this and other causes, the deaths annually exceed the births. Elephantiasis Arabum and Lepra are fearfully prevalent among the black population of P. and neighborhood. The rainfall (67 inches) varies much, being smallest at Nickerie, in the w., and largest at Montbyou, in the e. of the colony (128 inches). The coast of Dutch Guiana is an alluvial deposit formed by the rivers and by the equatorial stream which flows eastward. Further inland, the soil is diluvial loam, bearing the finest timber-trees; and s. of this line are extensive savannas of white sand, stretching toward the hills and mountains of the interior, which are chiefly of gneiss and granite.

As to religion, about 40,000 of the inhabitants of the colony are reckoned Christians, of whom 22,000 are Moravians (mostly converts by missionary agency), 5,000 Dutch Reformed (mainly in Paramaribo), 13,000 Rom. Catholics. There are about 700 Jews. The Moravian missionaries have missions in the interior, especially among the bush-negroes, who speak a language based on broken English, with Dutch, Portuguese, and Indian additions. The colony possesses 60 schools and 5,000 pupils, of whom 1,300 are in the capital. The great proportion of the births in the colony is illegitimate. The influx of immigrants 1870-80 varied from 2,720 in 1873 to 43 in 1876. The immigrants are mostly from British India. See GUIANA, DUTCH.

PARAMATTA, n. *pär-a-mät'ta*: twilled cloth of cotton and wool, resembling merino in appearance. It was invented at Bradford, in Yorkshire, England; and has become an important manufacture of that place. The weft consists of combed merino wool, and the warp of cotton. It resembles in texture the Coburg and Orleans cloths. This fabric was named from the town P. (q.v.).

## PARAMATTA—PARAMOUR.

**PARAMATTA**, *pär-a-müt'ta* (spelled **PARRAMATTA** by Australian authorities): pleasantly situated town of New South Wales, near the w. extremity of Port Jackson, on a small river of the same name; 15 m. by land w.n.w. of Sydney, with which it is connected by steamer and railway. It is the oldest town after Sydney in the colony: its former name was Rosehill. The houses are mostly detached, and the streets are wide and regular, the principal one being about a mile in length. The institutions comprise churches, schools, an orphan and a lunatic asylum, and a prison. 'Colonial tweeds,' 'Paramatta cloths' (made first from wool exported hence), and salt are manufactured. Pop. (1871) 6,103; (1881) 8,433; (1888) 12,000; (1901) 12,560.

**PARAMETER**, n. *pär-räm'ë-tër* [Gr. *para*, beside; *metron*, a measure]: a certain constant straight line belonging to each of the three conic sections; the constant quantity which enters into the equation of a curve. **P.** (called also *Latus Rectum*) denotes, in the case of the parabola, a third proportional to the abscissa of any diameter and its corresponding ordinate; in the ellipse and hyperbola, a third proportional to a diameter and its conjugate. The **P.** of any diameter is, in the case of the parabola, the same as the double ordinate of that diameter which passes through the focus, and is four times as long as the distance between the diameter's vertex and the directrix. The term **P.** was formerly used to denote also *any* straight line about a curve, on which its form could be made to depend; or any constant in its equation, the value of which determined the individual curve; but its employment in this sense is now discontinued, except in the theory of homogeneous differential equations, where the constants, for the purpose of aiding the solution, are supposed to vary; and the method is consequently denominated the 'Variation of the Parameters.' In the application of this method to determine the orbital motions of the planets, the 'seven necessary data' (see **ORBIT**) were called parameters, but for this the term 'elements' is now substituted.

**PARAMOS**, n. plu. *pär-rä'mōz* [Sp.]: a name given by the Spanish settlers to the high desert tracts of the Andes of S. Amer., covered with stunted trees.

**PARAMOUDRA**, n. plu. *pär'ä-mô'dră* [a native Irish name]: gigantic flints occurring in the chalk near Belfast, and common in the chalk near Norwich, which seem to have been goblet-shaped zoophytes allied to the sponges.

**PARAMOUNT**, a. *pär'ä-mownt* [OF. *par amont*, upper: L. *a monte*, from the mountain]: above all; possessing the highest title or jurisdiction; superior to all others; eminent: **N.** the highest in rank.—**SYN.** of 'paramount, a.': chief; principal; superior; pre-eminent; supreme.

**PARAMOUR**, n. *pär'ä-môr* [F. *par amour*, by way of love—from L. *per*, by; *amōrem*, love]: a sweetheart or lover—used in an ill sense.

## PARANA—PARANYMPH.

**PARANA**, *pâ-râ-nâ'*: important river of Brazil, rising in the province of Minas Geraes, about 100 m. n.w. of Rio de Janeiro. It flows w. more than 500 m., through the provinces of Minas Geraes and São Paulo; in the latter it is joined by the Parnahiba, after which its course alters, and it flows s.s.w. to Candelaria, thence w. 200 m. to its confluence with the Paraguay (q.v.), and then, bending s., passes Santa Fé, below which its channel frequently divides and incloses numerous islands. From Santa Fé, it flows s.e., and unites with the Uruguay in forming the Rio de la Plata. Entire length about 2,400 m. It draws a number of considerable tributaries from the province of Parana (q.v.); and of the others, the chief are the Paraguay, Uruguay, Pardo, Tiete, and Parnahiba. For vessels drawing 16 ft. it is navigable to Corrientes, 600 m. from its mouth.

**PARANA'**: province in s. Brazil; bounded n. by the province of São Paulo, e. by the Atlantic, s.e. by Santa Catharina, s. by Rio Grande do Sul, w. by Paraguay and Matto Grosso; 85,415 sq. m. Formerly included in the province of São Paulo, it fully commenced its provincial career 1853. The sea-coast is indented by several bays. A line of mountains runs parallel to the coast about 80 m. inland, and throws out spurs and branches westward. The streams flowing e. from this watershed, though numerous, are inconsiderable; while the rivers flowing w. into the Parana (q.v.), which forms the w. boundary of the province, are all about or more than 400 m. in length. The principal are the Paranapanema, Ivay, Piquery, and Yguassu. The climate is unusually healthful; the soil fertile; and agriculture, rearing cattle and swine, and gathering *maté* or Paraguay tea are the chief employments. The cap., Curitiba, has manufactures of coarse woollens, and with its agricultural surroundings has pop. 12,000.—The chief and almost the only port, Paranagua (pop. about 5000), on a bay of the same name, is about 400 m. s.w. of Rio de Janeiro. It exports *maté* to the value of \$1,000,000 annually.—Pop. of province (1888) 187,548; (1890) 249,491.

**PARANAPHTHALINE**, n. *pär'ä-näp'thă-lîn* [Gr. *para*, beside, near, and Eng. *naphthaline*]: a white solid substance, so called because it resembles and accompanies naphthaline.

**PARANEMATA**, n. plu. *pär'ä-ně'mă-tă* [Gr. *para*, beside, close to; *nēma*, a thread; *nēmăta*, threads]: in *bot.*, the filaments found along with spores in the fructification of many Algæ.

**PARANTHINE**, n. *pär'än-thîn*: a mineral consisting of silicate of alumina and lime; scapolite.

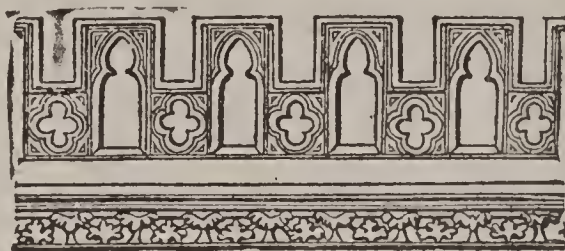
**PARANYMPH**, n. *pär'ä-nîmf* [Gr. *para*, beside; *numphē*, a bride]: a male friend of the bridegroom who leads the bride to her marriage; one who gives countenance and support to another.

## PARAPECTIC ACID—PARAPHERNALIA.

**PARAPECTIC ACID**, *pär'ä-pëk'tik* [Gr. *para*, beside, and *pectic*]: an amorphous variety of pectic acid, produced by long-continued boiling, in water, of vegetable jelly.

**PARAPEGM**, n. *pär'ä-pëm* [Gr. *parapëg'ma*—from *para*, beside, and *pëgnumi*, I fix]: in *anc. times*, a brazen tablet on which laws, proclamations, etc., were inscribed, and exposed to public view.

**PARAPET**, n. *pär'ä-pët* [F. *parapet*—from It. *parapetto*, a breastwork—from *parare*, to ward off; *petto*, the breast: L. *pectus*]: screen or wall on the edge of a rampart. **PARAPETED**, a. *pär'ä-pët-ëd*, having a parapet.—A *Parapet* is a wall raised higher than the gutter of a roof, for protection; in military works, for defense against missiles from without (see **FORTIFICATION**); in domestic



Ornamented Gothic Parapet.

buildings, churches, etc., to prevent accident by falling from the roof, or for purposes of ornament. Parapets are of very ancient date. The Israelites were commanded to build 'a battlement' round their flat roofs. In classic architecture, balustrades were used as parapets. In Gothic architecture, parapets of all kinds are used. In early work they are generally plain, but in later buildings they are pierced and ornamented with tracery, frequently of elaborate design, especially in French Flamboyant work. Shields and little arcades are used as ornaments to parapets; and the battlements of castles are imitated in the parapets of some religious and domestic buildings.

**PARAPII**, n. *pär'äf* [F. *parafe*, a flourish: Gr. *para*, beside; *haptō*, I join or connect]: addition to the signature formed by a flourish of the pen, which, during the middle ages, constituted some sort of provision against forgery. Its use is not extinct in diplomacy, and in Spain the P. is still a usual part of a signature.

**PARAPHERNALIA**, n. plu. *pär'ä-fër-nä'li-ä* [Gr. *parapherna*, goods in the wife's disposal besides her dower—from *para*, beyond; *phernē*, a dowry or portion; *pherō*, I bear]: term from the Roman law, denoting the clothing, jewels, ornaments, etc., which a wife brings with her at her marriage, besides her dowry; ornaments of dress in general; trappings or finery. In England, according to the common law, the husband may lawfully sell, pawn, or give away the P., and they are seizable

PARAPHIMOSIS—PARASANG.

for his debts; but he cannot dispose of them by will, unless he confers on the wife compensating benefits; and she must elect between these two which she will take. The tendency of legislation in the United States has long been toward equality of property rights between husband and wife. In nearly all the states, married women are competent to hold, in absolute individual ownership, property both real and personal, and to control it independently of their husbands.

PARAPHIMOSIS, n. *pär'ä-fi-mō'sis* [Gr. *para*, beyond; *phimōsis*, a binding or constriction]: a morbid constriction of the prepuce behind the glans.

PARAPHRASE, n. *pär'ä-frāz* [OF. *paraphrase*—from Gr. *paraphrāsis*, a paraphrase—from *para*, beside, beyond; *phrasis*, a speaking or telling]: loose or free translation of an author's words; verbal expansion; the rendering of a book or some passage of it into other and usually more easily understood language. A P. differs from Metaphrase, or strictly literal translation, in this, that it aims to make the sense of the text clearer by a lucid circumlocution, without actually passing into commentary. The versified passages of Scripture, forming part of the Psalmody of the Scottish Church, are popularly known as 'the Paraphrases.' PARAPHRASE, v. to render a passage plainer than in the original; to make a free translation of; to explain in many words. PAR'APHRASING, imp. PAR'APHRASED, pp. *-frāzd*. PAR'APHRAST, n. *-frāst*, one who paraphrases. PAR'APHRAS'TIC, a. *-frās'tik*, or PAR'APHRAS'TICAL, a. *-tī-kāl*, very full in explanation; not verbal or literal. PAR'APHRAS'TICALLY, ad. *-lī*.

PARAPLEGIA, n. *pär'ä-plē'jī-ä*, or PAR'APLEGY, n. *-plē'jī* [Gr. *para*, beside; *plēgē*, a stroke]: paralysis affecting the upper or lower half of the body: see PARALYSIS.

PARAPODIA, n. *pär'ä-pöd'i-ä* [Gr. *para*, beside; *podes*, feet]: the unarticulated lateral locomotive processes, or foot tubercles, of certain of the Annelida.

PARAPOPHYSIS, n. *pär'ä-pōf'i-sīs* [Gr. *para*, beyond; *apoph'usis*, an offshoot, a process]: in *anat.*, the process which extends outward, or outward and downward, from the body of the vertebra in fishes; a name given to the transverse process of an ideal typical vertebra.

PARAQUET, n. *pär'ä-kēt'*, or, in *OE.*, PAR'AQUI'TO, n. *-kētō*, PAR'AQUI'TOES, n. plu. *-kētōz* [Sp. *periquito*, a small parrot—from *perico*, a parrot]: a little parrot: see PAROQUET.

PARASANG, n. *pär'ä-säng* [Gr. *parasang'gēs*; Pers. *farsang*]: Pers. measure of length; as reported by Herodotus, Suidas, Xenophon, and other ancients, and as estimated by modern travellers, about 30 Greek stadia, =  $3\frac{1}{2}$  m. English. But there were different lengths assigned to the P. among anc. writers, varying from 21 to 60 stadia, i.e.. from 13,741 ft. 9 in. to 36,405 ft.

PARĀSĀRA—PARASITE.

PARĀSĀRA: name of several celebrated personages of ancient India, occurring in the *Mahābhārata* (q.v.), the *Purānās* (q.v.), and other works. Of one personage of this name, the *Mahābhārata* relates that he was son of S'akti, who was son of the patriarch Vasisht'ha. King Kalmāshapāda once meeting with S'akti in a narrow path, in a thicket, required him to stand out of the way. The sage refused; on which the Rāja beat him with his whip, and S'akti cursed him to become a Rākshasa, or demon. The Rāja, in this transformation, killed and ate S'akti, together with the other sons of Vasisht'ha. S'akti, however, had left his wife, Adris'yantī, pregnant; and she gave birth to Parās'ara, who was brought up by his grandfather. When he grew up, and was informed of his father's death, he instituted a sacrifice for the destruction of all the Rākshasas, but was dissuaded from its completion by Vasisht'ha and other sages. The same legend is referred to by the *Vishn'u-Purān'a*, where P. is introduced as relating, himself, part of this story, and adding that the saint Pulastya, one of the mind-born sons of Brahmā, in reward of the clemency that P. had shown even toward such beings as the Rākshasas, bestowed on him the boon of becoming the compiler of the *Purānās*, and of the *Vishn'u-Purān'a* in particular. 'This tradition,' Prof. Wilson observes, 'is incompatible with the general attribution of all the *Purānās* to Vyāsa;' but it may perhaps point only to a later recension.—A P., probably different from the above, is the author of a celebrated code of laws; he is often quoted by the commentaries.—A probably third P. is the reputed author of a *Tantra* (q.v.); and a fourth, the author of an astronomical work

PARASCENIUM, n. *pär'ä-sē'nĭ-ŭm* [Gr. *para*, beside; *skēnē*, a stage]: the place in the Roman theatre corresponding to the green-room of the modern one.

PARASELENE, n. *pär'ä-sē-lē'nē* [Gr. *para*, beside; *selēnē*, the moon]: a mock moon or lunar halo.

PARASITA, *pär-a-sĭ'tā*: order of insects, now usually distributed between *Anoplura* (true lice), a division of the order *Diptera*, and *Mallophaga* (bird-lice), a degraded division of *Neuroptera*. See LOUSE: PARASITES.

PARASITE, n. *pär'ä-sĭt* [F. *parasite*—from L. *parasitūs*, a parasite: Gr. *para'sĭtos*, one who eats at another's expense at table, a parasite—from *para*, beside; *sitēō*, I nourish; *sitos*, wheat, food]: one frequenting the tables of the rich and earning his welcome by flattery; a hanger-on; a fawning flatterer—a common character in Greek comedy: in *bot.*, a climbing-plant which grows upon a tree, and obtains nourishment from its juices (see PARASITES): in *entom.*, an insect living on some animal (see PARASITA: PARASITES). PAR'ASIT'ISM, n. *-sĭt'izm*, the manners of a parasite. PAR'ASIT'IC, a. *-sĭt'ik*, or PAR'ASIT'ICAL, a. *-ĭ-kāl*, resembling a parasite; fawning; living and drawing nourishment from other plants and animals. PAR'ASIT'ICALLY, ad. *-ĭ*.

## PARASITES.

PARASITES, ANIMAL AND VEGETABLE: organisms that infest other organisms and live at their expense.

ANIMAL PARASITES.—Of these, some are Entozoa, and some Epizoa (see ENTOZOOON: EPIZOOON). They belong to different classes, and even to different divisions of the animal kingdom; all, however, invertebrate. Many are of the division *Articulata*, and many of the division *Radiata*. Besides worms of various kinds (as tape-worms—including their larval forms, *Echinococcus*, *Cysticercus*, etc.—flake-worms, round-worms, thread-worms, etc.), there are among parasites not a few crustaceans, as the Lernæans, etc., and not a few insects, as the Louse (q.v.) and the bird-lice (*Mallophaga*). In the true lice (*Anoplura*), the mouth is small and quite suctorial; while in the *Mallophaga*, it is furnished with mandibles and hooked maxillæ. The species of *Anoplura* are found only on man and mammals; those of *Mallophaga* almost exclusively on birds, though one infests the dog. The *Mallophaga* show much greater activity than the *Anoplura*. When a bird dies, the bird-lice congregate near the beak, and seem disquieted, apparently anxious to change their abode. Some of the cirripedes which live in the skin of large marine animals, e.g., whales, can scarcely be regarded as parasitic animals, but rather bear to them a relation such as *Epiphytes* do to parasitical plants, not deriving their nourishment from the animal on which they live. Tape-worms, ascarides, and other intestinal worms, do not directly draw sustenance from the animal in which they live, by extracting its juices; yet they live at its expense, by consuming its food, after the food has undergone, in great part, the process of digestion.

VEGETABLE PARASITES.—These are plants which grow on other plants, and derive sustenance from their juices; the plants which live parasitically on animal tissues being generally called Entophytes (q.v.), though the distinction between these terms is not always preserved. Epiphytes (q.v.) differ from parasitical plants in subsisting not on the juices of the plant which supports them, but on decayed portions of its bark, etc., or drawing all their nourishment from the air. Parasitical plants are numerous and very various; the greater number, however, and the most important, being small fungi, e.g., Rust, Brand, Bunt, Smut, etc., whose minute spores are supposed in some cases to circulate through the juices of the plants which they attack. Concerning some minute fungi, e.g., the Mildews, it is doubted if they are truly parasitical, or if their attacks are not always preceded by some measure of decay. But among parasitic plants are not a few phanerogamous plants, some of which have green leaves; and some are even shrubby, as the Mistletoe, Loranthus, etc.; while the greater number have brown scales instead of leaves, as Dodder, Broom-rape, Lathræa, etc., and the whole of that remarkable order or class of plants *Rhizanthææ* or *Rhizogens*. of which the genus *Rafflesia* is distinguished

## PARASITIC DISEASES.

above all other plants for the magnitude of its flowers. Some parasitic plants, as the species of Dodder, begin their existence by independent growth from the ground; but when they have found suitable plants to take hold of and prey on, the connection with the ground ceases. Not a few, as Broom-rape and *Lathræa*, are root-parasites, attaching themselves usually to the roots of trees or shrubs; while some, as the Eyebright (*Euphrasia officinalis*), Yellow Rattle (*Rhinanthus crista galli*), Cow-wheat (*Melampyrum arvense*), etc., are parasitical only occasionally and partially, and are found chiefly on neglected grass-lands. Root-parasites attach themselves usually by means of little tubercles, which bury themselves under the bark.

PARASITIC DISEASES: one of the recognized orders of disease in Dr. Farr's classification: see NOSOLOGY. In these diseases, certain morbid conditions are induced by the presence of animals or vegetables which have found a place of subsistence within some tissue or organ, or upon some surface of the body of man or of other animals. For the forms of animal life giving rise to parasitic diseases, see ASCARIDES: CESTOID: ENTOMOZON: EPIZON: GUINEA-WORM: ITCH-MITE: LOUSE: NEMATHELMIA: STRONGYLUS: TAPE-WORM: TRICHINA: ETC. With the vegetable structures which give rise to special diseases, we are less accurately acquainted, in consequence of the limited knowledge of cryptogamic botany possessed by many writers who have recorded their experience of these cases. These parasites are either *fungi* or *algæ*, and are composed of simple sporules, germs, or cells, or of cells arranged in rows or groups, so minute as to require the microscope for their recognition. Fungi are the most numerous of all plants in regard to genera and species, and their growth is associated with serious injury both to animal and vegetable life. It is not, however, always easy to determine whether they are the direct cause of disease, or whether the diseased tissue has merely afforded a suitable nidus for their development. 'It is certain,' says Dr. Aitken, one of the most thorough investigators of this subject, 'that wherever the normal chemical processes of nutrition are impaired, and the incessant changes between solids and fluids slacken, then, if the part can furnish a proper soil, the cryptogamic parasites will appear. The soil they select is, for the most part, composed of epithelium or cuticle, acid mucus or exudation. Acidity, however, though favorable to their growth, is not indispensable, since some of the vegetable parasites grow upon alkaline or neutral ground, as on ulcerations of the trachea, or in fluid in the ventricles of the brain. Certain atmospheric conditions seem favorable to the occurrence of these vegetable parasites. For example, *Tinea tonsurans* may be quite absent for years in places such as workhouses, where it commonly exists, and then for several months every second or third child in the place gets the disease.'



## PARASITIC DISEASES.

There is undoubted evidence from the observations and experiments of Devergie, Von Bärensprung, and others, that these parasitic diseases may be transmitted by contagion from horses, oxen, and other animals to man; while conversely, Dr. Fox mentions an instance of a white cat which contracted the *mange* from *Tinea tonsurans* (ring-worm of the scalp), which affected the children of the family to which it belonged—the fungus of the mange in the cat being the same fungus as that of *Tinea* in the human subject—viz., the *Tricophyton* [Gr. root *tric*, a hair, and *phyton*, a plant].

The principal vegetable parasites associated in man with special morbid states are arranged by Aitken (*The Science and Practice of Medicine*, 1863, 2d ed. II. 177) as follows: 1. The *Tricophyton tonsurans*, present in the three varieties of *Tinea tonsurans*—viz., *T. circinatus* (ring-worm of the body), *T. tonsurans* (ring-worm of the scalp), and *T. sycosis menti* (ring-worm of the beard). 2. The *Tricophyton sporuloides*, together with the above, present in the disease *Plica Polonica*. 3. The *Achorion Schönleinii* and *Puccinia favi*, present in *T. favosa*, known also as *Favus* (q.v.) and *Porriigo scutulata* (the honey-comb ring-worm). 4. The *Microsporon mentagrophyta*, present in *Mentagra*. 5. The *Microsporon furfur*, which occurs in *Pityriasis versicolor*. 6. The *Microsporon Audouini*, present in *Porriigo decalvans*. 7. The *Mycetoma* or *Chionyphe Carteri*, which gives rise to the disease known as the 'fungus foot of India,' etc. 8. The *Oidium albicans* of diphtheria and aphtha. 9. The *Cryptococcus Cerevisiæ*, or *Yeast Plant*, occurring in the urine and contents of the stomach, if there is saccharine fermentation. 10. The *Sarcina Goodserii*, or *Merispædia ventriculi* (of Robin), found in vomited matters and in the urine. There are strong grounds, based partly on botanical and partly on clinical observation, for believing that the various fungi above described are mere varieties of two or more species in various phases of development.

Of all parasitic diseases, the most dangerous is the *Fungus Foot* or *Fungous Disease of India*. It occurs among natives only, so far as observed, in many parts of India and on the n.e. shores of the Persian Gulf. It is due undoubtedly to the presence of a fungus which eats its way into the bones of the foot and the lower ends of the tibia and fibula, penetrating by numerous fistulous canals through the tissue of the entire foot, and tending to cause death by exhaustion, unless amputation is performed in due time. Dr. Carter has described three forms of this disease, in which both the symptoms and the fungoid material differ considerably from each other. The first of these forms supplies an illustration of parasitic disease. In this form, the bones of the foot and the lower ends of the leg-bones are perforated in every direction with roundish cavities, varying in size from that of a pea to that of a pistol-bullet, the cavities being filled with the fungoid matter. The surrounding muscles, and subsequently the tendinous

## PARASOL—PARASPERMATIA.

and fatty structures, are converted into a gelatiniform mass, in consequence of which the foot presents a peculiar turgid appearance. The structure of the globular fungoid masses is shown in the accompanying figure,



drawn by Dr. H. J. Carter from a specimen which he examined immediately after amputation. Examined under the microscope, the fungoid mass is found to consist of short, beaded, tawny threads or filaments, arising from a common centre, and having at their tips large spore-like cells.

For further notice of parasitic diseases of the skin, see PITYRIASIS (var. *versicolor*): RING-WORM: SCALD-HEAD: ETC. The application of the Germ-theory (q.v.) of disease would lead to the inclusion of many other diseases among parasitic disorders, in the wider sense of the word: even specific fevers are by some so ranked. For diseases caused by the presence of the organisms known as bacteria, bacilli, etc., in the system, see GERM-THEORY.

PARASOL, n. *pär'ä-söl* or *pär-ä-söl'* [F. and Sp. *parasol*—from It. *parasole*, a parasol—from It. *parare*, F. *parer*, to ward off, and L. *sol*; It. *sole*, the sun]: a small umbrella carried by ladies as a shade against the sun's rays. PAR'ASOLETTE', n. *-ět'*, a small parasol.

PARASPERMATIA, n. plu. *pär'ä-spér-mā'shë-à* [Gr. *para*, beside; *sperma*, seed]: in *bot.*, bodies resembling spores, found in some Algæ.

## PARASTICHY—PARBUCKLE.

**PARASTICHY**, n. *pär-äs'ti-kē* [Gr. *para*, beside; *stichos*, a row]: in *bot.*, a secondary spiral, such as is visible in cones, owing to the close apposition of the scales, but not corresponding to the order of their development.

**PARATAXIS**, n. *pär'ä-täks'is* [Gr. *para*, beside; *taxis*, a putting in order]: a loose arrangement of propositions as they arise in the mind; in *gram.*, opposed to syntax.

**PARATHESIS**, n. *pär-räth'ë-sis* [Gr. *para*, beside; *thësis*, a placing]: apposition, or the placing of two or more nouns in the same case; a parenthetical notice; in *printing* or *writing*, that which is placed within brackets.

**PARATHETIC**, a. *pär'ä-thët'ik* [Gr. *para*, beside; *thëtikos*, fit for placing]: placed in apposition, as two or more nouns, singly or in a compound form, as *steam-engine*.

**PARATI**, *pâ-râ-tê'*: seaport town of Brazil, province of Rio de Janeiro, on the w. coast of the Bay of Angra, 90 m. s.w. of Rio de Janeiro. It has extensive commerce and numerous distilleries. Pop. said to be 10,000.

**PARATOLOID**, n. *pär-rät'ö-loyd*: name proposed 1890 by Dr. Robert Koch (q.v.) for the 'lymph' with which he proposed to cure tuberculosis. Its composition and mode of efficiency have not yet been authoritatively made public.

**PARATONNERRE**, n. *pär'ä-tön-när'* [F. *paratonnerre*—from *parer*, to ward off; *tonnerre*, thunder]: a lightning-conductor.

**PARAVANT**, n. *pär'â-vânt*, or **PARAVAUNT**, n. *pär'â-vânt* or *-vawnt* [OF. *paravant*, in front—from *par*, by, through; *avant*, before—from L. *ab*, from; *ante*, before]: in *OE.*, in front; publicly; beforehand.

**PARAY-LE-MONIAL**, *pâ-râ'-lêh-mō-nē-âl'*: town of Burgundy, dept. of Saône-et-Loire, famed for its Benedictine Abbey, founded 973, which contains the tomb of Mary Margaret Alacòque, the centre of recent pilgrimages by the confraternities of the Sacred Heart (q.v.). Pop. (1881) 3,174; of commune 3,979.

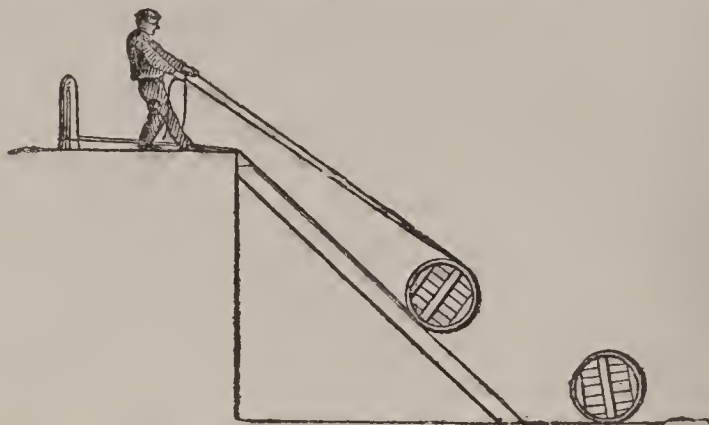
**PARBOIL**, v. *pär'boyl* [OF. *parbouillir*, to cook thoroughly, to parboil—from *par*, through; *bouillir*, to boil]: to boil in part; to half-boil. **PAR'BOILING**, imp. **PAR'BOILED**, pp. *-boyl'd*, boiled moderately or in part. *Note.*—**PARBOIL** formerly meant to 'boil thoroughly,' and acquired the meaning 'to boil in part' from the mistaken notion of its derivation from Eng. *part* and *boil*.

**PARBREAK**, v. *pär'bräk* [F. *par*, through, and Eng. *break*: Scot. *perbraik*, to shatter]: in *OE.*, to vomit.

**PARBUCKLE**, n. *pär'bük-l* [F. *par*, by or through, and Eng. *buckle*]: mode of drawing up or lowering down an inclined plane any cylindrical object, as a barrel or a heavy gun, without aid of crane or tackle. It consists in passing a stout rope round a post or some suitable object at the top of the incline, and then doubling the ends under and over the object to be moved. This con-

## PARCÆ—PARCEL.

verts the cask or gun into a pulley in its own behalf, and limits the pressure at each end of the rope to one-fourth the weight of the object moved, as felt on the incline. By hauling in the ends equally, the cask ascends; or *vice versa*. PARBUCKLE, v. to hoist, lower, or roll by means of ropes formed into a parbuckle. PAR'BUCKLING, imp. -bŭk-lĭng. PAR'BUCKLED, pp. -bŭk-lĭd.



Parbuckle.

PARCÆ, n. plu. pâr'sē [L. *pars*, a part]: in *anc. Roman myth.*, the three goddesses of Fate or Destiny, who assigned to every one his 'part' or lot. The Greek name, *Moiræ*, has the same meaning [from *meros*, a share]. They are mentioned only once by Homer, who in every other instance speaks of Fate (*Moirā*) in the singular, and whose Fate was not a deity, but a mere personification, the destinies of men being made by him to depend on the will of the gods; while, according to the later Greeks and the Romans, the gods themselves were subject to the control of the P. or *Moiræ*. Hesiod, however, who is almost contemporary with Homer, speaks of three Fates, whom he calls daughters of Night—*Clotho*, the spinner of the thread of life; *Lachesis*, who determines the lot of life; and *Atropos*, the inevitable. They were represented usually as young women of serious aspect; *Clotho* with a spindle, *Lachesis* pointing with a staff to the horoscope of man on a globe, and *Atropos* with a pair of scales, or sun-dial, or an instrument to cut the thread of life. In the oldest representations of them, however, they appear as matrons, with staffs or sceptres. They had places consecrated to them throughout all Greece, at Corinth, Sparta, Thebes, Olympia, etc.

PARCEL, n. pâr'sĕl [F. *parcelle*, a little part, a parcel—from mid. L. and It. *particella*, any little part or particle—from L. *partic'ula*, a small part]: portion of anything taken or selected; a quantity; a part of a whole; a small package of goods; a number of persons, in contempt: in *law*, technical word for the article in a conveyance describing the lands, etc., conveyed: V. to put up or divide into portions or parts. PAR'CELLING, or PAR'CELLING, imp.: N. among *seamen*, the wrapping of ropes, etc., with pieces of tarred canvas to protect them from friction. PAR'CELLED, or PAR'CELED, pp. -sĕld. PARCEL-BOOK, a merchant's register-book of the dispatch of parcels.

## PARCENARY—PARCHMENT.

**PARCEL-BEARDED**, partially bearded. **PARCEL-BLIND**, partially blind. **PARCEL-GILT**, partially gilded, usually on the inside. **PARCEL-VAN**, a light conveyance for the delivery of parcels.

**PARCENARY**, n. *pâr'sën-ă-rî* [Norm. F. *parcenier*; OF. *parcener*, to take part with—from L. *partîrî*, to part, to divide]: joint tenancy by descent. **PAR'CENER**, n. *-ér*, a co-heir; OE. spelling of **PARTNER**, which see: see also **COPARCENARY**.

**PARCH**, v. *pârch* [Bav. *pfärzen*, to fry; *färzen*, to toast bread: L. *perares'co*, I grow very dry: comp. Ir. *barg*, burning, red-hot: the word is probably onomatopoeic]: to burn the surface of a thing; to scorch; to dry to excess; to shrivel with heat. **PARCH'ING**, imp.: **ADJ.** having the quality of burning or drying to excess. **PARCHED**, pp. *pârcht*: **ADJ.** dried to excess. **PARCHEDLY**, ad. *pârch'-êd-lî*. **PARCH'EDNESS**, n. *-nês*, the state of being scorched by heat or dried to excess. **PARCH'INGLY**, ad. *-lî*.

**PARCHIM**, *pârch'im*: town of the grand duchy of Mecklenburg-Schwerin; on the Elde, here divided into two arms, 23 m. s.e. of Schwerin. It is very old, irregularly built, surrounded by beautiful gardens, and has a gymnasium and two churches. The people are employed in agriculture, in the manufacture of tobacco, cloth, leather, and brandy, and in weaving. Pop. (1880) 9,063; (1890) 9,960.

**PARCHMENT**, n. *pârch'mënt* [F. *parchemin*, parchment—from L. and It. *pergame'na*, parchment—from *Pergamos*, in Asia Minor]: one of the oldest inventions of writing materials, known at least as early as B.C. 500. Herodotus speaks of books written on skins in his time. Pliny, without good grounds, places the invention as late as B.C. 196, stating that P. was made at Pergamos (hence the name *Pergamena*, corrupted into Eng. parchment) in the reign of Eumenius II., in consequence of Ptolemy of Egypt having prohibited the exportation of papyrus. Possibly the Pergamian invention was an improvement in the preparation of skins, which had certainly been used for this purpose centuries before. The manufacture rose to great importance in Rome about a century B.C., and soon became the chief material for writing on; and its use spread all over Europe, and retained pre-eminence until the invention of paper from rags: this, from the great durability of P., proved fortunate for literature.

There are several kinds of P., prepared from skins of different animals, according to the uses intended. The ordinary writing P. is made from skins of the sheep and of the she-goat; the finer kind, *vellum*, is made from those of very young calves, kids, and lambs; the thick common kinds, for drums, tambourines, battledores, etc., from those of old he-goats and she-goats, and in n. Europe from wolves; and a peculiar kind is made from asses' skins, the surface of which is enamelled. It is used for tablets, as black-lead writing can be readily

## PARCIMONY—PARDON.

removed from it by moisture. The method of making P. is at first the same as in dressing skins for leather. The skins are limed in the lime-pit until the hair is easily removed. They are then stretched tightly and equally, and the flesh side is dressed as in currying, until a perfectly smooth surface is obtained. It is next *ground* by rubbing over it a flat piece of pumice-stone, previously dressing the flesh side only with powdered chalk, and slaked lime sprinkled over it. It is next allowed to dry, still tightly stretched on the frame. The drying process is important, and must be rather slowly carried on, for which purpose it must be in the shade. Sometimes these operations have to be repeated several times, to insure an excellent quality, and much depends on the skill with which the pumice-stone is used, also on the fineness of the pumice itself. When quite dried, the lime and chalk are removed by rubbing with a soft lambskin with the wool on.—PARCHMENT-PAPER, or VEGETABLE PARCHMENT, substance made known by W. E. Gaine 1854, and again by the Rev. J. Barlow 1857. It resembles animal parchment so closely, that it is not easy to distinguish the difference. It is made from the water-leaf, or unsized paper, by immersing it for only a few seconds in a bath of oil of vitriol, diluted with one-half its volume of water. The exactness of this dilution is of the greatest importance to the success of the results. The dilute acid must not be used immediately after mixing, but must be suffered to cool to the ordinary temperature; without attention to these apparently trivial points, the operator will not succeed. The alteration in the paper is very remarkable. No chemical change is effected, nor is the weight increased; but it appears that a molecular change takes place, and the material is placed in a transition state between the cellulose of woody fibre and dextrine. Vegetable parchment is in some respects preferable to the old kind, for insects attack it less, and it can be made so thin as to be used for tracing-paper, and bears wet without injury.

PARCIMONY: obsolete form of PARSIMONY (q. v.).

PARD, n. *pârd* [L. *pardus*; Gr. *pardos*; OE. *pard*, a panther]: a leopard; a panther; in *poetry*, any spotted beast. FARDAL, n. *pâr'dâl*, for PARD in OE.

PARDON, n. *pâr'dn* [F. *pardon*, pardon—from *pardonner*, to forgive—from mid. L. *perdonârĕ*, to pardon, to remit a debt—from L. *per*, through; *dono*, I give: It. *perdona*, pardon]: forgiveness; remission of a penalty or punishment; a warrant of forgiveness or of exemption from punishment: V. to grant forgiveness of; to remit; to excuse; to forgive; to absolve; to acquit. PAR'DONING, imp. PAR'DONED, pp. *-dnd*. PAR'DONER, n. *-ér*, one who pardons; one who dealt in papal indulgences. PAR'DONABLE, a. *-ă-bl*, that may be pardoned; venial; excusable. PAR'DONABLY, ad. *-ă-blĭ*. PAR'DONABLENESS, n. *-bl-nĕs*, the quality of being pardonable. PAR'DON ME, forgive me; a word denoting a civil denial or a

## PARDON—PARÉ.

slight apology. **BEG PARDON**, a slight apology for non-attention, non-observation, an unintentional though trivial fault, and the like.

**PARDON**, in Law: act of the executive authority of a state or commonwealth, whereby an individual is exempted from the penalty attaching by law to an offense that he has committed. P. is, by its nature, a derogation of the law; and if the power of pardoning is exercised frequently, that is proof either that the law itself works injustice and needs amendment, or that the power granting the pardon is not in sympathy with the intent of the lawgiver. Under the federal constitution and the constitutions of the several states of the American Union, the pardoning power is lodged in the executive of the United States and of the states, and it extends to all offenses against the laws, except in cases of impeachment. In some of the states, the pardoning power does not vest absolutely in the executive: either the legislature must concur, or a special board of P. must have first approved the petition for the exercise of the pardoning power.

To be valid, a P. must express distinctly the crime intended to be forgiven; and it exempts the culprit from punishment for that particular offense, and no other: thus, were a man to be pardoned for an assault and battery, the act of P. would not cover the crime of manslaughter or murder, should the injured party die of his injuries. P. restores to the criminal all his rights as they were before the offense and conviction; but to this rule there are exceptions—first, it does not restore civic capacity; second, if the status of another party has been changed by the conviction of the offender, that change is not undone by the P.—for example, if criminal conviction of a man works divorce of his wife, she does not become his wife again through the pardon.

**PARDUBITZ**, *pâr'dô-bīts*: town of Austria, Bohemia, 61 m. e. of Prague. It has copper, iron, and paper manufactures. P. was the headquarters of the king of Prussia 1836, June 7. Pop. (1880) 10,010.

**PARE**, v. *pâr* [F. *parer*, to deck, to trim, to peel an apple; It. *parare*, to dress, to trim out—from L. *parâre*, to get ready]: to slice or shave off from the surface; to diminish by little and little; to trim. **PA'RING**, imp.: N. that which is pared off. **PARED**, pp. *pârd*. **PARER**, n. *pâr'èr*, he or that which pares. **PA'RINGS**, n. plu. *-rîngz*, unimportant matters; trifles; small savings in a bad sense, as in *cheese-parings*.

**PARÉ**, *pâr're*, F. *pâ-râ'*, **AMBROISE**: renowned French surgeon, father of modern surgery: b. about the beginning of the 16th c., at Laval, dept. of Mayenne, France; d. 1590, Dec. 22. His father, who was a trunk-maker, was unable to afford him a literary education, and apprenticed him to a barber and surgeon. P., after a brief term of service, acquired such fondness for surgery and anatomy, that he went to Paris to prosecute his studies.

## PAREGMENON.

His means were very limited; he could afford to obtain instruction from only the more obscure teachers; few books were within his reach; yet by perseverance and rare discrimination, combined with the valuable practice in the Hôtel de Dieu of Paris, he laid a foundation for future eminence. In 1536 P. was received as a master barber-surgeon, and joined the army of Marshal René de Monte-Jean, which was starting for Italy. During this campaign he improved the mode of treatment of gunshot wounds, previously most barbarous—namely, cauterization with boiling oil. His reputation as well as his skill were heightened during this campaign. In 1539 he returned to Paris, and was received with distinction by the Royal College of Chirurgery, of which he was subsequently appointed president. In a later campaign, under Antoine de Bourbon, Duke of Vendôme, he cured François, second Duke of Guise, of the wound which conferred on him the sobriquet *Balafré*; and substituted ligature of the arteries for cauterization with a red-hot iron after amputation—being the first to show that this method could safely be applied. 1552, Sep., he was appointed surgeon to King Henry II., and in the following year was taken prisoner at Hesdin; but was released, in consideration of his having cured Col. de Vaudeville, after rejecting the brilliant offers made him by the Duke of Savoy to remain in his service. Returning to Paris, honors were showered upon him; and though he was ignorant of Latin, the *conditio sine quâ non* of a liberal education at that time, no hesitation was shown in conferring upon him learned titles and degrees. He attended Francis II. on his death-bed, and held the office of king's surgeon to his successors, Charles IX. and Henry III. The former of these monarchs, whose life had been gravely threatened by an injury inflicted by his physician Portail, and who had been preserved by P., saved him during the massacre of St. Bartholomew by locking him in his own chamber. During the latter part of P.'s life, he suffered from the envy of his professional brethren, who showered obloquy upon him for having 'dishonored science by writing in the vulgar tongue.' P. died at Paris. His writings have exercised great influence on the practice of surgery in various countries, and are held of high authority on gunshot wounds. The first complete edition appeared at Lyon 1562; and the last, ed. by Malgaigne, at Paris (1840-1, 3 vols.). Besides these are 8 Latin editions, and more than 15 translations into English, Dutch, German, etc.

PAREGMENON, n. *pâ-rĕg'mĕ-nŏn* [Gr. *paragō*, I lead, I derive, as one word from another]: in *rhēt.*, the employment of several words having a common origin in the same sentence.



## PAREGORIC—PARENCHYMA.

**PAREGORIC**, n. *pär'ë-gör'ik*, or **PAREGORIC ELIXIR** [Gr. *paregorikos*, capable of affording relief—from *agoreuō*, I address]: the *Compound Tincture of Camphor* of the London, and the *Camphorated Tincture of Opium* of the British Pharmacopœia; consisting of an alcoholic solution of opium, benzoic acid, camphor, and oil of anise, every fluid ounce containing two grains each of opium and benzoic acid, and a grain and a half of camphor. This preparation is much used both by the profession and by the public. In doses of one to three drachms, it is an excellent remedy for the chronic winter-cough of old people, the opium diminishing the bronchial secretion and the sensibility of the pulmonary mucous membrane, while the benzoic acid and oil of anise act as stimulating expectorants. It has been found useful also in chronic rheumatism. **PAREGORIC**, a. soothing; mitigating.

**PAREIRA ROOT**, *pa-rî'ra rô't* (called sometimes *Pa-reira Brava*): pharmaceutic substance, generally regarded as the dried root of *Cissampelos Pereira* (see **CISSAMPELOS**), but coming from a different plant of the same order of *Menispermaceæ*—viz., either *Chondrodendrum tomentosum*, or *Botryopsis platophylla*.

**PARELCON**, n. *pa-rël'kôn* [Gr. *parelkō*, I draw out; *para*, along; *elkō*, I draw]: in *gram.*, the addition of a syllable or particle to the end of a pronoun, verb, or adverb.

**PARELLA**, *pâ-rël'lâ* (Fr. *parelle* or *perelle*): name often given to some of those crustaceous lichens which are used to produce Archil, Cudbear, and Litmus; though the name belongs strictly to one species, *Lecanora parella*, resembling the Cudbear Lichen, but with somewhat plaited warty crust, and with shields (*apothecia*) having a concave disk of the same color as the thick tumid even border. Like the Cudbear Lichen—to which it is far superior in the quality of the dye-stuff obtained from it—it grows on rocks in mountainous districts in Britain and on the continent of Europe, abounding particularly in Auvergne and other parts of France.

**PAREMBOLE**, n. *pâ-rëm'bô-lê* [Gr. *parem'bolê*, a throwing in beside—from *para*, beside; *en*, in, and *ballō*, I throw]: something explanatory thrown into a sentence more closely connected with the context than a parenthesis.

**PARENCHYMA**, n. *pâ-rëng'kî-mă*, or *pär'ëng-kî'mă* [Gr. *pareng'chūma*, a discharge of humors from the lungs, the substance of organs—from *para*, beside, through; *eng'cheō*, I pour in, I infuse; *chuma*, juice (see **CHEMISTRY**)]: in *bot.*, the cellular tissue or pith of plants; tissue composed of thin-walled cubical cells. **PARENCHYMATOUS**, a. *pär'ëng-kîm'ă-tūs*, or **PARENCHYMOUS**, a. *pâ-rëng'kî-mūs*, pertaining to or resembling parenchyma; spongy; soft; pithy. See **CELLULAR TISSUE**.

## PARENETIC—PARENT AND CHILD.

PARENETIC, a. *pär'è-nèt'ík*, or PAR'ENET'ICAL, a. *-käl* [Gr. *parainet'ikos*—from *parai'nēsis*, exhortation]: persuasive; encouraging.

PARENT, n. *pär'ènt* or *pā'rènt* [F. *parent*—from L. *paren'tem*, a father or mother: It. *parente*]: a father or mother; cause; source. PA'RENTLESS, a. *-lēs*, deprived of parents. PARENTAGE, n. *pā'rènt-āj* [F.]: extraction; birth. PARENTAL, a. *pā-rènt'äl*, pertaining to or becoming a parent; affectionate. PARENT'ALLY, ad. *-lī*. PARENT'ICIDE, n. *-ī-sīd* [L. *cædo*, I cut or kill]: one who kills a parent; the crime.

PAR'ENT AND CHILD, in Law: legal relation incident to the relation between Husband and Wife (q.v.), and flowing out of the contract of marriage. The legal is to be distinguished from the natural relation, for two persons may be by the law of nature parent and child, while they are not legally or legitimately so. Hence a radical distinction exists between natural or illegitimate and legitimate children, and their legal rights as against their parents respectively are very different. Legitimate children are the children of two parents recognized as married according to the laws of the country in which they are domiciled at the time of the birth; and according to the law of England, if a child is illegitimate at the time of the birth, nothing that can happen afterward will ever make it legitimate, the maxim being 'once illegitimate, always illegitimate.' In the United States, there is wide diversity between the statutes of the several commonwealths with regard to legitimacy. Subsequent marriage of the parents legitimatizes the child in Ill., Ind., Mich., Miss., and Mo.; in O., a bastard is legitimatized by mere acknowledgment on the part of the putative parents. In Ala., Conn., Ill., Ind., Ky., Me., Mass., Mich., N. C., O., R. I., Tenn., Vt., and Va., a bastard inherits from his mother, under certain restrictions imposed by statutes.

1. *As to Legitimate Children.*—According to the law of England, there is no duty whatever on the parent to support the child, consequently no mode of enforcing such support. The law of nature was probably considered sufficient to supply the motives which urge a parent to support the child. This defect was to some extent remedied when what is called the Poor-Law was created by statute in the reign of Elizabeth, by which law parents and children are compellable to a certain small extent, but only when having the pecuniary means to do so, to support each other, or rather to help the parish authorities to do so. In the United States the law requires the father to support his infant children if he be able, even though they have property of their own. But should he neglect his duty, and should the child be found in a destitute state, and be taken up, fed, clothed, and saved from starvation by a stranger, such stranger cannot, in the United States any more than in England, sue the parent for the expense, or any part of it, how-

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ever necessary to the child's existence. To make the father liable for maintenance, there must in all cases be made out against him some contract, express or implied, by which he undertook to pay for such expense. But when the child is living in the father's house, it is always held by a jury or court, particularly in the United States, that slight evidence is sufficient to prove at least an implied promise by the father to pay for such expenses—e.g., if the child orders clothes or provisions, and the father sees these in use or in process of consumption, it will be taken that he assented to and adopted the contract, and so he will be bound to pay for them. So, if a parent put a child to a boarding-school, very slight evidence of a contract will be held sufficient to hold him liable. When it is said that a parent is not compellable by the English common law to maintain his child, it must at the same time be observed that if a child is put under the care and dominion of an adult person, and the latter wilfully neglects or refuses to feed or maintain such child, whereby the child dies or is injured, such adult will incur the penalties of misdemeanor; but this offense does not result from the relationship of parent and child, and may arise between an adult and child in any circumstances, as where a child is an apprentice or servant. In England, when a person becomes chargeable to the parish as a pauper, the lawful authorities can obtain an order from the justice of the peace, commanding the parent (or the child) of such pauper to pay the expense of the pauper's maintenance. In the United States, as above said, the parent is compelled to provide for the support of his children while they are minors, or under the father's authority; but this obligation ceases at the majority of the child, unless the child becomes chargeable to the public as a pauper; and generally the statutes require children to maintain their parents who are in want. In both England and the United States, if the parent die intestate, both the real and personal property will go to the children, subject to the widow's dower; but the parent is entitled, if he choose, to disinherit the children, and give away his property to strangers, provided he execute his will in due form, which he may competently do on death-bed if in possession of his faculties.

Another important point of law, affecting the mutual relation of parent and child, is the right of the parent to the custody of the child. At common law it is the father who has the right to the custody of the child until majority at least, as against third parties; and no court will deprive him of such custody except on strong grounds. Whenever the child is entitled to property, the court so far controls his parental right that, if the father is shown to act with cruelty, or to be guilty of immorality, a guardian will be appointed. A court of common law also has often to decide in cases of children brought before it by *habeas corpus*, when parties have

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had the custody against the father's will. In such cases, if the child is under 14 years, called the age of nurture, and the father is not shown to be cruel or immoral, the court will order the child to be delivered up to him; but if the child is above 14, or, as some say, above 16, the court will allow the child to choose where to go. So the father is entitled by his will to appoint a guardian to his children while they are under age. In England, the mother had, at common law, no right as against the father to the custody of the children, however young; but under a statute of 36 and 37 Vict. c. 12, she is entitled to the custody of the child while under 16 years of age, or rather she is entitled to apply to the court of chancery for leave to keep the children while under that age; and access may be allowed to the father or guardian. If the parents separate by agreement, no stipulation will be enforced prejudicial to the child. In case of divorce or judicial separation, the court of divorce has power to direct who is to have the custody of the children. In the United States, the custody of the children of divorced or legally separated parents is determined by the court, the general principle being to consult the welfare of the child rather than any supposed rights of the parents, and to commit the children to one or other parent, or even to a third person. If the father dies without leaving any testamentary guardian, the mother becomes guardian of the person and estate of the child till it is 14 years old, when it may choose a guardian; but in Penn., the orphans' court appoints the guardian until the infant shall attain the 14th year.

2. *Illegitimate Children.* In strictness of law, an illegitimate child has no father—hence, in case of the death of the father without making a will, the law will not treat such child as entitled to a share of the father's property. With regard to the mother, she is not bound to maintain her child, according to the common law in England; but the Poor-Law Acts have made an important qualification of her rights and duties. The father is not bound even by the Poor-Laws to maintain the child, and the parish officers cannot now institute any proceeding whatever against him for this purpose; but the mother can, to a certain extent, enforce against him a contribution toward the child's maintenance and education, or the parish officers may do so. It is entirely discretionary on the mother to take any proceeding against the father, but if she chooses she can do so; and the first step is to go before a justice of the peace, and obtain a summons of affiliation. On proof that he is the father of the child, the magistrate may make an order against the father to pay the expenses of lying-in, and a weekly sum not exceeding five shillings till the child attains the age of 16. The utmost, therefore, that the father can be made to contribute toward the child's maintenance is only a portion of the whole, the chief burden being thrown on the mother, who is assumed to be the more blameable party. Though

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she is not bound by the common law to maintain her child, yet the Poor-Laws make her liable to maintain the child till it attains 16; and not only is she bound, but also any man who marries her is by statute bound to support all her illegitimate (also legitimate) children till they attain the age of 16. The result is, that illegitimate children under 16 are better provided for by the present state of the law in England than legitimate children, inasmuch as the mother is positively bound to support her illegitimate child, and only to a less extent her legitimate child. As regards the custody of illegitimate children, the mother is the party exclusively entitled, for the father is not deemed, in point of law, to be related to such child. In the United States, generally, the mother of a bastard child has right to the custody and control of such child, even as against its father; but after her death the court may deliver the child to the father rather than to the maternal grandfather: the father of a bastard child can be compelled to contribute to its support when it becomes a charge to the county or town, owing to the mother's inability to support it.

In Scotland, the law of parent and child differs materially from the law of England. In Scotland, a bastard is legitimatized by the marriage of his parents. So, too, Scotch law differs from English in that it imposes the obligation of mutual support upon parents and children (legitimate). The legal liability as between parent and child is qualified in this way by the common law, that if a person has both a father and a child living and able to support him, then the child is primarily liable, and next the grandchild, after whom comes the father, and next the grandfather. Not only are parent and child liable to support each other while the party supporting is alive, but if he die, his executors also are liable; and this liability is not limited by the age of majority, but continues during the life of the party supported. In Scotland, a father cannot disinherit his child—at least so far as concerns his movable property; and cannot deprive the children of one-third, or, if their mother is dead, of one-half of such property. In many other respects, the ancient common law of Scotland is more in harmony with the spirit of modern legislation than is the common law of England.—See PATRIA POTESTAS.

PARENTHESIS, n. *pă-rĕn'thĕ-sĭs*, PAREN'THESES, n. plu. *-thĕ-sĕz* [Gr. *paren'thĕsis*, insertion—from *para*, beside; *en*, in; *thĕsis*, a putting or placing]: clause, or part of a sentence or argument, not absolutely essential to the sense, and not necessarily grammatically connected with the sentence, but generally serving either for explanation or confirmation, sometimes chiefly for rhetorical effect. A parenthesis is regularly included between the upright curves ( ), though the *dash* (—), or even the comma, at the beginning and end of the parenthesis is often used. PARENTHETIC, a. *păr'ĕn-thĕt'ĭk*, or PAR'ENTHET'ICAL, a. *-ĭ-kăl*, expressed in a parenthesis; pert. to or using parentheses. PAR'ENTHET'ICALLY, ad. *-ĭ.*

PAREPA-ROSA - PARIES.

PARE'PA-RO'SA, EUPHROSYNE : see ROSA.

PAREISIS, n. *pär'ë-sïs* [Gr. *paresis*, fr. *para*, beside; *hiemi*, let go] : paralysis, affecting muscular motion, but not sensation. *General P.* is the progressive paralysis of insanity.

PARGET, n. *pâr'jët* [mid. L. *spargitūrë*, to sprinkle frequently; *spargere*, to sprinkle: others again, L. *paries* or *pariëtem*, a wall] : rough plaster laid on roofs; the coarse plaster composed of lime, hair, and cow-dung, used to line chimney-flues: V. to cover with the rough plaster parget. PAR'GETING or PAR'GETTING, imp. PAR'GETED or PAR'GETTED, pp.

PARHELION, n. *pâr-hë'li-ön*, PARHE'LIA, n. plu. -*li-ä* [Gr. *para*, beside; *hëlios*, the sun] : a mock sun appearing as a bright image near the real sun: see HALO—PARHELION—CORONA.

PARIAH, n. *pâr'ri-ä* [Skr. *parâyä*, strange, foreign] : one of the lowest class of people in certain parts of India, without caste; an outcast; one contemned and despised by society. Pariah denotes the lowest class of the population of India—a caste by itself, which, not belonging to any of the castes of the Brahminical system, is shunned even by the lowest Hindu professing the Brahminical religion, as touching a Paria would render him impure. The P. seem to belong to a negro race, as appears from their short woolly hair, flat nose, and thick lips; they are of short stature; their propensities are of the coarsest kind. In some parts of India, they have sunk so low that according to some writers, it is scarcely possible to imagine a more degraded set of beings. PARIAN DOGS, native dogs in the East without masters or homes (see CUR). *Note.*—The Rev. P. Percival, in his *Land of the Veda*, says that *pariar* or *pariah* is from Tamil *pari*, a tom-tom or drum, pariahs being the class employed as tom-tom beaters.

PARIAL, n. *pär-rï'äl* [contr. of *pair royal*] : three of a sort in certain games of cards.

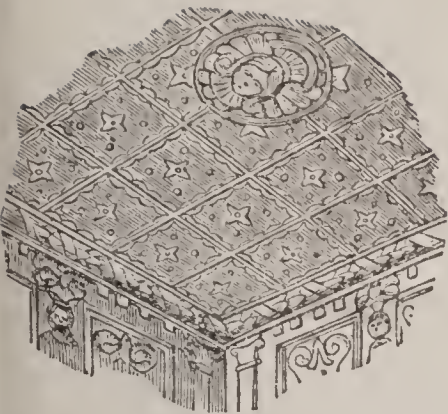
PARIAN, a. *pär'ri-än* : pertaining to or found in the island of *Paros*, a place famed for its marble: N. fine kind of porcelain for statuettes.

PARIAN CHRONICLE: see ARUNDEL MARBLES.

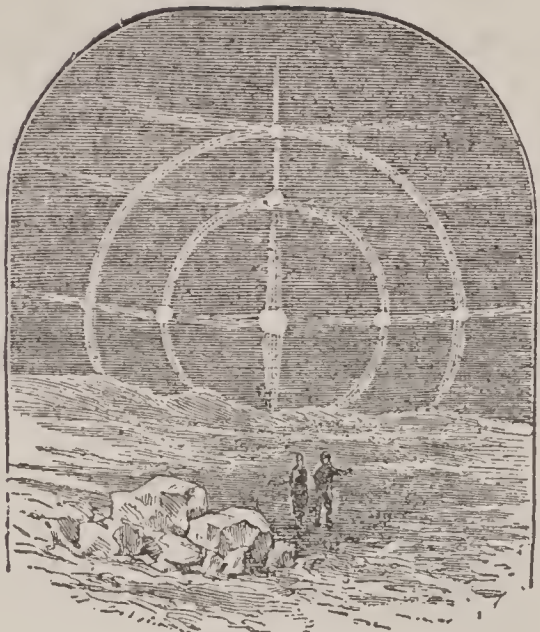
PARIDÆ AND PARUS: see TIT.

PARIDIGITATE, a. *pär-i-dij'i-tät* [L. *par*, genit. *paris*, equal; Eng. *digitate*] : having an even number of fingers and toes.

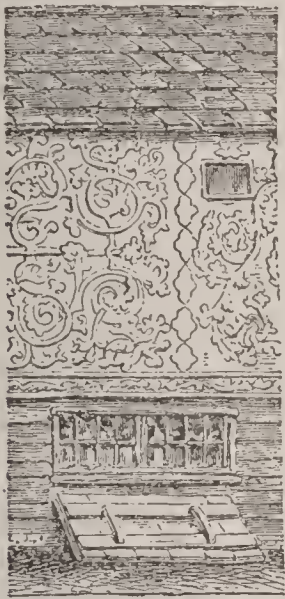
PARIES, n. *pär'i-ëz*, PARIETES, n. plu. *pär-rï'ë-tëz* [L. a wall] : in *anat.* and *bot.*, the inside walls of any cavity, as the parietes of the cranium, the parietes of a capsule. used generally in the plural.



Pargeting.—Elizabethan Ceiling.



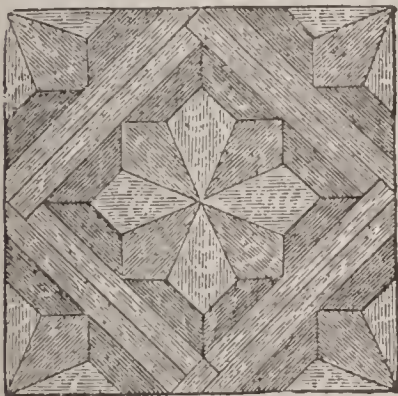
Paraselenæ.



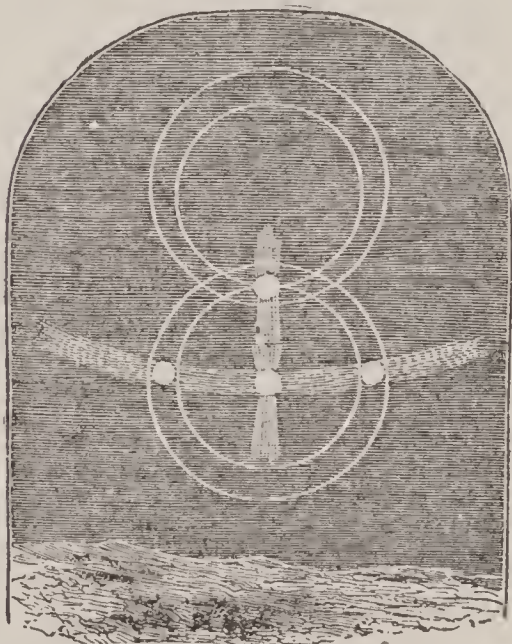
Pargeting, Wyvenhoe, Essex.



Parhelia.



Parquetry.



Parhelia,



Parr.

## PARIETAL—PARING AND BURNING.

**PARIETAL**, a. *pǎ-rĭ'ĕ-tăl* [F. *pariétal*—from L. *parietalis*—from *paries* or *parietem*, a wall: It. *parietale*]: pertaining to walls; in *anat.*, constituting the sides or walls—applied to a large flat bone on each side of the head (see **SKULL**): in *bot.*, growing from the side or wall of another organ—applied to placentas on the wall of the ovary. **PARIETARY**, n. *pǎ-rĭ'ĕ-tǎ-rĭ*, a plant, the common pellitory of old walls. **PARIETES**, n. plu. *pǎ-rĭ'ĕ-tĕz*, the inclosing walls of any cavity.

**PARIETIN**, n. *pǎ-rĭ'ĕ-tĭn*: a yellow coloring matter, found in the plant *Pamētiǎ pariētĭna*: see also **CHRYSOPHANIC ACID**.

**PARIETO-**, prefix *pa-rĭ-ĕt-o-* [L. *paries*, genit. *parietis*; *o* connective]: a wall.

**PARIETOSPLANCHNIC**, a. *pǎ-rĭ'ĕt-ō-splāngk'nĭk* [L. *paries*, a wall, *parietis*, of a wall; Gr. *splanchna*, bowels or entrails]: denoting one of the nervous ganglia of the Mollusca, which supplies the walls of the body, and the viscera.

**PARIMA SIERRA**, *pâ-rĕ'mâ sĕ-ĕr'râ*: great mountain system in the n.e. portion of S. America; known also as the Highlands of Guiana. It lies between the plains of the Rio Negro and Amazon, and those of the lower Orinoco river. A large part of the range is a plateau about 2,000 ft. above sea-level, much of it heavily wooded, but containing many valleys with fine natural pastures, and traversed by barren ridges with numerous elevated peaks, of which Maravaca and Duida rise about 8,000 ft. The w. portion is the most rugged. A strip of lowland lies between the mountains and the ocean. The Essequibo, Orinoco, and the Rio Branco rivers rise in this range.

**PAR IMPAR**, phrase *pâr ĩm'pâr* [L.]: odd or even.

**PARING AND BURNING**: agricultural operation of cutting off the surface of the soil in thin slices, which are then dried and burned; the most effectual way of reclaiming peat and other waste land, the surface of which is matted with coarse plants, difficult of decay. It is also applied advantageously to cold clay soils, apt to produce rank weeds and coarse grasses, which are to be broken up after lying for some time in grass. The ashes of the plants, consisting of potash and other salts, act as a powerful fertilizer; while the clay being reduced to the state of brick-dust, both improves the texture of the soil, and acts as an absorbent for retaining moisture and nutritive gases, and giving them out to the roots of growing plants. On thin light soils the operation is rarely advisable, unless care is taken to make the turfs merely smolder, without flame; for much of the scanty volatile vegetable matter is dissipated. This expensive operation, much less common than formerly in England, is practiced scarcely at all in the United States.



## PARI PASSU—PARIS.

**PARI PASSU**, phrase *pär'ī päs'sū* [L.]: with equal pace, steps, or progress. In law, a term signifying equally, in proportion; without undue preference; said especially of the creditors of an insolvent estate, who, with certain exceptions, are entitled to payment of their debts in shares proportioned to their respective claims.

**PARIPINNATE**, a. *pär'ī-pīn'nāt* [L. *par*, equal; *pinna*, a wing]: in *bot.*, a compound pinnate leaf ending in two leaflets.

**PARIS**, *pāris*: city, cap. of Edgar co., Ill., on the Cleveland Cincinnati Chicago and St. Louis, and the Terre Haute and Peoria railroads, 19 m. w.n.w. of Terre Haute, Ind., 170 m. from St. Louis. There is an acad.; 2 daily and 3 weekly newspapers are published; and there are 2 national banks (cap. \$208,000) and 1 private bank. It is a centre of trade for the surrounding region, and there are various manufacturing interests. Pop. (1870) 3,057; (1880) 4,373; (1890) 4,996; (1900) 6,105.

**PARIS**: city, cap. of Bourbon co., Ky., on the Kentucky Central and the Kentucky Midland railroads, and on Stover Creek, tributary of the Licking river; 40 m. from Frankfort, 80 m. s. by e. of Covington. There are 2 weekly and one semi-weekly newspapers, and 5 state banks (cap. \$795,000). It is the principal centre of the manufacture of Bourbon whisky, has gas-works, flour-mills, and rope-walks; produces large quantities of tobacco, and is one of the leading live-stock markets of the region. Pop. (1870) 2,655; (1880) 3,204; (1890) 4,218; (1900) 4,603.

**PARIS**: city, cap. of Lamar co., Tex.; on the Gulf Colorado and Santa Fé, the St. Louis and San Francisco, and the Texas and Pacific railroads; 10 m. s. of Red river, 300 m. n.e. of Austin. It is in a wheat and cotton region; has 2 large flour-mills, cotton-seed-oil mill, cotton compress, 3 foundries, 2 artificial-ice factories, large fruit cannery and minor industries; 3 national bank (cap. \$600,000), 2 state banks (cap. \$250,000); 3 newspapers. The receipts (1888) were \$35,600, disbursements \$29,257, debt \$103,852; mercantile transactions aggregated \$4,970,000 (dry goods \$1,000,000, groceries \$1,500,000, lumber \$1,000,000); produce handled comprising: corn 475,000 bushels, wheat 100,000, cotton 25,000 bales, wool 28,500 lbs., hides 150,000 lbs., cotton-seed, 15,000 tons. Assessed valuation (1870) \$700,000; (1880) \$1,500,000; (1888) \$4,000,000. Pop. (1870) 1,800; (1880) 3,980; (1890) 8,254; (1900) 9,358.

## PARIS.

PARIS, *pär'is*, F. *pâ-ré'* (ancient *Lutetia Parisiorum*): city, the metropolis of France;  $48^{\circ} 50'$  n. lat., and  $2^{\circ} 20'$  e. long.; on the Seine, about 110 m. from its mouth. Pop. (1869) 1,875,000; (1872) 1,799,250; (1876) 1,988,806; (1891) 2,447,957; (1901) 2,714,068. Its circumference is more than 25 m. It lies in a hollow about 200 ft. above sea-level, and is surrounded by low hills, which in their highest ranges to the n. attain an elevation of only 290 or 300 ft., as at Montmartre and Belleville. These hills, separated by narrow valleys or plateaus, as those of St. Denis to the n., Ivry to the e., Montrouge to the s., and Grenelle to the s.w., are encircled at a distance of two to five m. by an outer range of heights, including Villejuif, Meudon, St. Cloud, and Mont-Valérien, the highest point in the immediate vicinity of the city. The Seine, which enters P. in the s.e. at Bercy and leaves it at Passy in the w., divides the city into two parts, and forms the two islands La Cité and St. Louis, both covered with buildings.

The earliest notice of P. occurs in Julius Cæsar's *Commentaries*, in which it is described (first half of B.C. 1st c.) under the name Lutetia, as a collection of mud huts, composing the chief settlement of the Parisii, a Gallic tribe, conquered by the Romans. The ruins of the Palatium Thermarum (Palais des Thermes), and of ancient altars, aqueducts, and other buildings, show that even in Roman times the town extended to both banks of the Seine. Lutetia began in the 4th c. to be known as Parisia, or P., from the Celtic tribe of the Parisii, to whom it belonged. In the 6th c., P. was chosen by Clovis as the seat of govt.; and after having fallen into decay under the Carolingian kings, in whose time it suffered severely from frequent invasions of the Northmen, it finally became in the 10th c. the residence of Hugh Capet, founder of the Capetian dynasty, and the cap. of the Frankish monarchy. From this period, P. continued rapidly to increase, and in two centuries it had doubled in size and population. In the middle ages P. was divided into three distinct parts—La Cité, on the islands; the Ville, on the right bank; and the Quartier Latin, or University, on the left bank of the river. Louis XI. (reigned 1461–83) did much to enlarge P., and to efface the disastrous results of its hostile occupation by the English during the wars under Henry V. and Henry VI. of England; but its progress was again checked during the wars of the last of the Valois, when the city had to sustain several sieges. On the accession of Henri IV. of Navarre 1589, a new era was opened to Paris. The improvements begun under his reign were continued under the minority (1601–22) of his son, Louis XIII. Louis XIV. (reigned 1643–1715) converted the old ramparts into public walks or *boulevards*, organized a regular system of police, established drainage and sewerage works, founded hospitals, almshouses, public schools, scientific societies, and a library, and thus gave to P. a claim to be regarded as the focus of European civiliza-

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tion. The terrible days of the Revolution (1789-94) caused a temporary reaction. The improvement of P. was recommenced on a new and grander scale under the first Napoleon (from about 1804), when new quays, bridges, markets, streets, squares, and public gardens were created. All the treasures of art and science which conquest placed in his power were applied to the embellishment of P., in the restoration of which he spent more than \$20,000,000 in 12 years. His downfall, 1815, again arrested progress, and in many respects P. fell behind other European cities.

Renovation of various sorts was recommenced under Louis-Philippe (reigned 1830-48); but as lately as 1834, much of the old style remained; the gutters were in the middle of the streets, there was little underground drainage from the houses, oil-lamps were suspended on cords over the middle of the thoroughfares, and, except in one or two streets, there were no side-pavements. It was reserved for Napoleon III. (reigned 1852-70) to render P. the most commodious, splendid, and beautiful of modern cities. When he commenced his improvements, P. still consisted, in the main, of a labyrinth of narrow, dark, and ill-ventilated streets. He resolved to pierce broad and straight thoroughfares through the midst of these, to preserve and connect all the finest existing squares and boulevards; and in lieu of the old houses pulled down in the heart of the town, to construct, in a ring outside of it, a new city in the most approved style of modern architecture. With the assistance of Baron Haussman, prefect of the Seine, his schemes were carried out with rare energy and good taste. Two straight and wide thoroughfares, parallel to and near each other, crossed the whole width of Paris from n. to s. through the Cité; a still greater thoroughfare was opened from e. to w. through the whole length of the town n. of the Seine. The old boulevards were completed so as to form outer and inner circles of spacious streets—the former lying chiefly along the outskirts of the old city, the latter passing through and connecting a long line of distant suburbs. In 1867, when the international exhibition was opened, P. had become in all respects the most splendid city in Europe; and in that year it was visited by more than a million and a half of foreigners. Many further improvements were then contemplated. New botanical and zoological gardens were to be formed; the museums and class-rooms of the Jardin des Plantes were to be rebuilt; an underground railway was to be formed, crossing P. from e. to w.; Montmartre was to be levelled, and the Seine was to be deepened up to Grenelle, the point where it leaves the town; and there a harbor was to be formed for sea-going ships, which was to convert P. into a sea-port. Financial and political difficulties were, however, at hand (see FRANCE), and these great schemes had to be postponed. The siege of P. by the Germans, 1870, Sep. 19—1871, Jan. 28, caused much less injury to the city than might have been expected: it was

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reserved for a section of the Parisian population to commit an act of Vandalism without parallel in modern times. Mar. 18, the Red Republicans, who had risen against the government, took possession of P.; Mar. 27 the Commune was declared the only lawful government. Acts of pillage and wanton destruction followed. May 15 the column erected to the memory of Napoleon and the Great Army, in the Place Vendôme, one of the principal squares of P., was solemnly pulled down as 'a monument of tyranny.' The govt. troops under Marshal MacMahon attacked the insurgents, and kept them from further mischief. The former succeeded in entering Paris May 20, and next day the Communists began systematically to set fire with petroleum to a great number of the chief buildings of P., public and private. The fire for a time threatened to destroy the whole city. It raged with the greatest fury on the 24th, and was not checked until property had been lost to the value of tens of millions of dollars, and historical monuments destroyed which never can be replaced. The horror inspired by the Commune for a time drove the wealthy classes from Paris, and it was feared that it would lose its prestige as a European capital. This result, however, has been in great degree averted. In the autumn of 1873, all the private houses burnt had been rebuilt—the monuments only partially injured had been restored, and the streets and public places were as splendid and gay as in the best days of the empire. There remained, however, to recall the Commune, the blackened ruins of the Tuileries, the Hôtel de Ville, and two or three other buildings noticed below.

The Seine, in passing through P., is spanned by 28 bridges. The most celebrated and ancient are the Pont Notre-Dame, erected 1500, and the Pont-Neuf, begun 1578, completed by Henri IV. 1604, and thoroughly renovated 1852. This bridge, which crosses the Seine at the n. of the Ile-de-la-Cité, is built on 12 arches, and abuts near the middle on a small peninsula jutting into the river and planted with trees, forming a background to the statue of Henri IV. on horseback which stands in the central open space on the bridge. Among the other bridges, the handsomest are the Pont de la Concorde, 130 yards long, built 1787-90; the Pont du Carrousel, Pont d'Austerlitz, and the Pont d'Jéna, both of the time of the First Empire; and the Pont des Invalides, Pont de l'Alma, and Pont de Solférino—all handsome structures, adorned with military and naval trophies commemorative of events and victories connected with the Second Empire. These bridges all communicate directly with the spacious quays, planted with trees, which line both banks of the Seine, and which, with the boulevards, give characteristic beauty to the city. Although the most ancient quays—e.g., Des Augustins and De la Mégisserie—date from the 14th c., the greater part of these magnificent embankments, 12 m. in extent, is due to the first Napoleon and Napoleon III.

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The private houses as well as the public buildings are of a light-colored kind of limestone, easily wrought and carved ornamentally. With this material the residences are reared in huge blocks, to a height of six or seven stories; each floor constituting a distinct dwelling; access to all the floors in a tenement being gained by a common stairway, usually placed under charge of a porter or janitor at the entrance. Very frequently, the tenements surround an open quadrangle, to which there is a spacious entry, the gate of which is kept by a porter for all the inhabitants of the several stories. In these respects, therefore, P. differs entirely from London; for instead of extending rows of small brick buildings of a temporary kind over vast spaces, the plan consists of piling durable houses on the top of each other, thus condensing the population in a comparatively limited area. In the great new streets formed in the time of Napoleon III., this general plan has been adhered to, but with this difference, that instead of being narrow and crooked, the streets are wide and straight. Among the finest are the Rue de Rivoli, two m. in length, the Rue de la Paix, the Rue du Faubourg St. Honoré, and the Rue Royale. The Boulevards, which extend in semicircular line on the right side of the Seine, between the nucleus of the city and its surrounding quarters, present the most striking feature of Paris life. In all the better parts of the city they are lined with trees, seats, and little towers called *Vespasiennes*, covered with advertisements. Restaurants, cafés, shops, and various places of amusement succeed one another for miles, their character varying from the height of luxury and elegance in the western Boulevard des Italiens, to the homely simplicity of the eastern Boulevards Beaumarchais and St. Denis. Among public squares or *places*, most noteworthy is the Place de la Concorde, which connects the Gardens of the Tuileries with the Champs-Élysées, and gives a magnificent view of some of the finest buildings and gardens of Paris. In the centre is the famous obelisk of Luxor, covered over its entire height of 73 ft. with hieroglyphics; brought from Egypt to France, and 1836 placed where it now stands. On the site of this obelisk stood the revolutionary guillotine, at which perished Louis XVI., Marie Antoinette, Philippe Egalité, Danton, Robespierre, and a host of other victims. Of other squares, the following are some of the most handsome: Place du Carrousel, between the Tuileries and Louvre; Place Vendôme, above referred to, with Napoleon's Column of Victory; Place de la Bastille, where once stood that famous prison and fortress; Place Royale, with its two fountains and a statue of Louis XIII.; Place de l'Hôtel de Ville, formerly Place de la Grève, for many ages the scene of public executions, and the spot at which some of the bloodiest deeds of the Revolution were perpetrated. The Porte St. Martin and Porte St. Denis, erected by Louis XIV. to commemorate his victories in the Low Countries, and

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adorned with bas-reliefs representing events of these campaigns, mark the ancient limits of the most turbulent quarters of the Paris of the past; while the Arc de l'Étoile, begun by Napoleon I. 1806, and completed 1836 at a cost of more than \$2,000,000, may be said to form the extreme w. boundary of the aristocratic quarters. This arch, which bounds the Champs-Élysées, has a total height of 152 ft., and breadth 137: it is profusely adorned with bas-reliefs and alto-reliefs representing victories of Napoleon; these were injured during the bombardment of Paris, but have since undergone complete restoration. The great streets which radiate from the Arc de Triomphe were among the most magnificent of those constructed in the time of Napoleon III., and they still form the finest quarter of Paris. A great avenue runs e. from the Arc de Triomphe to the Palace of the Tuileries, in the heart of the city.

The Palace of the Tuileries (q.v.) was begun 1566 by Catharine de' Medici, and enlarged by successive monarchs while it was a royal residence, until it formed a structure nearly a quarter of a mile in length, extending at right angles to the Seine. E. of the Tuileries, at a distance of more than a quarter of a mile, was erected the palace of the Louvre, forming a square (nearly), 576 ft. by 538 ft., remarkable, especially the e. façade, for architectural beauty. Its site was originally covered by a fortress, erected by Philippe Auguste, which was changed into a royal residence by Charles V. In 1541 the structure was demolished, and a new palace was built for Francis I. by Pierre Lescot. Catharine de' Medici and Charles IX. began the long picture gallery which connects the building with the Tuileries; Henry IV. finished it; the remarkable e. façade was designed by Perrault and begun 1665; and enlargements and improvements were made by Card. Richelieu, and Napoleons I. and III. It long since ceased to be a royal residence. N. of the picture gallery and between the two palaces lay the Palace de Carrousel, into the n. side of which, at the accession of Napoleon III., there intruded a mass of poor and narrow streets. One of the emperor's earliest improvements was to remove these buildings, and connect the Tuileries and Louvre on the n. side, throwing them into one vast building, forming the most magnificent palatial structure in the world. The Tuileries continued to be occupied as the residence of the imperial family; but the Louvre proper formed a series of great galleries filled with pictures, sculptures, and collections of Egyptian, Greek, and Roman antiquities. The Communists attempted to burn the whole pile; but succeeded only in destroying the Tuileries (of which the main part is not to be rebuilt), and the s. wing of the Louvre. The library of the Louvre, with its contents, was burned, but the rest of the building and its priceless treasures were saved. A large sum was voted by the govt. for the restoration of the Louvre; and this work was undertaken and carried forward with

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atmost dispatch. The old Louvre is now used as a museum of art, and the new Louvre chiefly for govt. offices. The museum is really a consolidation of 15 museums and has great artistic and historical worth. N. of the injured part of the Louvre is the Palais Royal (q.v.), the most valuable part of which, fronting the Rue St. Honoré, was fired by order of the Commune 1871. The Palace of the Luxembourg, on the s. side of the Seine, was built by Marie de' Medici in the Florentine style. It contains many magnificent rooms, some of which have been employed as picture galleries for the works of modern artists. The Luxembourg was formerly the house of the peers, after 1871 was used as the prefecture of the Seine, and 1879 became the meeting-place of the French senate. On the n. bank of the Seine, opposite the island of the Cité, stood the old Hôtel de Ville, which, before its destruction by the Commune, was one of the most magnificent buildings in Paris. It was the residence of the prefect of the Seine, who held a sort of court there, and it included all the offices for the municipal business of Paris. It was commenced under Francis I., but had been trebled in extent by recent additions. The statues and rich ornaments with which it was decorated were almost entirely destroyed, but steps were immediately taken to have the Hôtel carefully rebuilt in the style of its predecessor. On the island of the Cité stands the Palais de Justice, a vast building, also fired by the Commune; some parts of it date from the 14th c.; others are modern. It is the seat of some of the courts of law, e.g., courts of cassation, of appeal, and of police. The old palace was not much injured by the fire; but the new portion (again rebuilt) constructed during the reign of Napoleon III., and much admired for its architecture, was left in ruins. Within the precincts of this palace are the Sainte Chapelle, and the noted old prison of the Conciergerie, in which Marie Antoinette, Danton, and Robespierre were successively confined.

The Conciergerie, in which prisoners are lodged pending their trial, constitutes one of the eight prisons of P., of which the principal is La Force. The Nouveau Bicêtre is for convicts sentenced to penal servitude for life; St. Pélagie receives political offenders, St. Lazare is exclusively for women, the Madelonnettes for juvenile criminals, and Clichy for debtors.

The number of the institutions of benevolence is enormous. The largest of the numerous hospices or almshouses is La Salpêtrière, probably the largest asylum in the world, extending over 78 acres of land, and appropriated solely to old women, 1,300 of its 4,500 inmates being insane patients; Bicêtre, with nearly 3,600 beds, receives only men. The Hospice des Enfants Trouvés (Foundling Hospital) provides for the infants brought to it till they reach the age of maturity, and demands payment only in the event of a child being reclaimed. The Crèches, or public nurseries, first established 1844,

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of which there are now 18, receive the infants of poor women for the day at the cost of 20 centimes. Besides institutions for the blind, deaf and dumb, convalescents, sick children, etc., P. has 17 general and special hospitals: of these the oldest and most noted are the Hôtel Dieu, receiving annually 13,000 patients; La Charité, and La Pitié.

The chief institutions connected with the University of France, and with education generally, are in the Quartier Latin. The Sorbonne (q.v.), a large building erected by Cardinal Richelieu for the faculties of the old Univ. of Paris, contains lecture-halls and class-rooms, and an extensive library open to the public. There degrees are granted by the Univ. of France in the faculties of science, letters, and theology; and gratuitous public lectures are delivered, attended by a large number of students. Near the Sorbonne is the Collège de France, where also gratuitous lectures are delivered by eminent scholars. The École Polytechnique, the School of Medicine, and the School of Law, the Observatory, and the Jardin des Plantes, with its great museum of nat. history, lecture-rooms, and botanical and zoological gardens, are in the same quarter. The principal of the public libraries are those of the Rue Richelieu, now called the Bibliothèque Nationale, which contains 2,500,000 vols., 100,000 MSS., 20,000 vols. or portfolios of engravings, and a great collection of coins and medals (see LIBRARIES), which originated in a small collection of books placed by Louis XI. in the Louvre. No city on its side of the Alps is richer than P. in fine-art collections, and among these the museums at the Louvre stand pre-eminent. The Palais des Beaux-Arts is used as an exhibition of art, manufactures, and architectural models. The Hôtel Cluny, connected underground with the Palais des Thermes, in addition to its being in itself a most interesting monument of mediæval art, contains curious relics of the arts and usages of the French people from the earliest ages of their history to the Renaissance period. The Gobelins, or tapestry manufacture, may be included under fine arts, as all the productions of its looms are manual, and demand great artistic skill. The Conservatoire des Arts et Métiers, in the Rue St. Martin, contains a great collection of models of machinery, and class-rooms for instruction of workmen in all departments of applied science. The Palace of Industry, built 1854 for the Universal Exhibition, now forms a permanent exhibition. The spacious building in which the Exhibition 1878 took place was named Palace of the Trocadéro.

Among the more than 60 parish churches of P., the grandest and most interesting, in an historical point of view, is the cathedral of Notre-Dame, on a site occupied successively by a pagan temple and a Christian basilica of the time of the Merovingian kings. The present building was constructed between the 12th and 15th c.; and in its present restored magnificence, ranks as one of the noblest specimens of Gothic architecture. St.-Ger



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main-des-Prés, probably the most ancient church in P., was completed 1163; St. Étienne du Mont and St. Germain l'Auxerrois, both ancient, are interesting—the former for its picturesque and quaint decorations, and for the tomb of St. Geneviève, the patron saint of P.; and the latter for its rich decorations and the frescoed portal, restored at the wish of Margaret of Valois. The Sainte Chapelle, built by St. Louis 1245–48, for reception of the various relics which he had brought from the Holy Land, is one of the most remarkable buildings in Paris, profusely decorated in all parts with brilliantly colored materials. Its present beauty is due entirely to the restorations completed by Napoleon III. at a cost of \$250,000. It was threatened by the Commune, but saved. Among modern churches are the Madeleine, in imitation of a Greek temple, and gorgeous with gildings, frescoes, carvings, marbles, and statues; and the Pantheon, begun as a church, but converted by the constituent assembly of republican France into a temple dedicated to the great men of the nation—it was restored to the church by Napoleon III., and rededicated to St. Geneviève; Notre-Dame de Lorette, erected 1823, a flagrant specimen of the meretricious taste of that day; and St. Vincent de Paul, completed 1844, somewhat less gaudy and more imposing in style. Among the few Prot. churches, L'Oratoire is the largest and best known.

P. abounds in theatres and places of amusement suited to the tastes and means of every class. The leading houses, as the Opéra, Théâtre Français—chiefly for classical French drama—Odéon, Théâtre Italien, etc., receive a subvention from govt., and all are under strict police supervision. The new opera-house, completed 1875, is a wonderfully magnificent building, costing, exclusive of the site, \$5,500,000. Cheap concerts, equestrian performances, and public balls, in the open air in summer, supply a constant round of gayety to the burgher and working classes at moderate cost, and form a characteristic feature of P. life; while, in addition to the noble gardens of the various imperial palaces, the most densely crowded parts of the city have public gardens, shaded by trees, and adorned with fountains and statues, affording the means of health and recreation to the poor. Beyond the fortifications at the w. of P., is the Bois de Boulogne, converted by Napoleon III. from a wood covered with stunted trees into one of the most beautiful gardens in Europe. That part which skirted the fortifications was destroyed during the siege; but it has been replanted, and is now as attractive to visitors as it has ever been.

P. has three large and twelve lesser cemeteries, of which the principal is Père-la-Chaise, extending over 200 acres, filled in every part with monuments to the countless number of celebrated persons buried here. The Morgue is a building in which the bodies of unknown persons who have met a violent death are placed; which bodies if not claimed within three days are buried at public

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expense. The s. parts of the city are built over beds of limestone, rich in fossils, which have been so extensively quarried for building material as to have become a network of vast caverns, which in some cases scarcely afford sufficient support to the houses above. These quarries were converted first in 1784 into catacombs, in which are deposited the bones of the dead, collected from the ancient cemeteries of Paris.

P. was surrounded, under Louis-Philippe, with fortifications extending 30 m. round, and costing more than \$27,000,000; and, in addition, 16 detached forts have been erected at definite distances from one another. The Champ-de-Mars is a vast sandy plain near the Quai d'Orsay, on which reviews and other military displays and national festivals are held. Close to it stands the École Militaire, founded 1752, and used as barracks for infantry and cavalry, of which it can accommodate 10,000 men and 800 horses. The Hôtel des Invalides, founded 1670 for disabled soldiers, is on the left bank of the river. The crypt of its church contains the sarcophagus, hewn from a huge block of Russian granite, in which lies the body of Napoleon I., deposited there 1840.

P. is divided into 20 arrondissements. The prefect of the Seine is the chief of the municipal govt., and is appointed by the national govt. There is a large municipal council, chosen by popular election. Each arrondissement has a maire and two assistant councilors. The prefect of police is at the head of the civic guard or gendarmes, the fire-brigade, and the sergents de ville or city police, who are armed with a sword. The cleaning, sewerage, and water supplies of P. are under charge of the prefect. P. is now abundantly supplied with pure and wholesome water; since 1854, the length of vaulted sewers has been doubled, and 1881, Dec. 31, amounted to 440 m. The paving of the city also has been doubled, and the street lighting is effected by about 15,000 gas jets and numerous electric lights. In 1818, public slaughterhouses or abattoirs were established at different suburbs, and only at these is allowed the slaughter of animals. Large cattle markets are held near the licensed *Abattoirs* (q.v.). There are in the heart of the city numerous *halles*, or wholesale, and *marchés*, or retail markets. The principal of these is the Halles Centrales, near the church of St. Eustache, covering nearly 20 acres. Among older markets are the Halle aux Vins, in which 500,000 casks of wine can be stowed, and the Marché aux Fleurs.

For an account of P., see *Le Nouveau Paris*, by Labedolière; Moriac's *Paris sous la Commune* (Paris 1871); G. A. Sala's *Paris Herself Again*; and the recent editions of Hackette's, Baedeker's, and Murray's guide-books. A great work, which was to include all the principal documents connected with the history of P., was commenced during the late empire, under the supervision of Baron Haussman. Seven quarto vols. had appeared when the work was interrupted by the events of 1871.

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PARIS: genus of plants of the small endogenous or dictyogenous nat. order *Trilliaceæ*, of which one species, *P. quadrifolia*, called HERB PARIS, is common in moist shady woods in parts of Britain. It is rarely more than a ft. high, with one whorl of generally four leaves, and a solitary flower on the top of the stem, followed by a berry. The berry is reputed narcotic and poisonous, but its juice has been employed to cure inflammation of the eyes. The root has been used as an emetic.

PARIS, *pär'is*, called also ALEXAN'DER: legendary Trojan hero, appearing in Homer as the second son of Priam and Hecabe, sovereigns of Troy. His mother dreamed during her pregnancy that she gave birth to a firebrand, which set the whole city on fire, a dream interpreted by Æsacus or Cassandra to signify that P. was to originate a war ending in the destruction of his native city. To prevent its realization, Priam caused the infant to be exposed upon Mount Ida by a shepherd named Agelaus, who found him, five days afterward, alive and well, a she-bear having given him suck. Agelaus brought him up as his own son, and he became a shepherd on Mount Ida, distinguishing himself by his valor in protecting the other shepherds from their enemies—whence his name, Alexander, 'defender of men.' An accident having revealed his parentage, old Priam became reconciled to his son, who married CEnone, daughter of the river-god Cebren. Nevertheless his mother's dream was to come true. He was appealed to, as umpire, in a strife which had arisen among the three goddesses, Hera (Juno), Athene (Minerva), and Aphrodite (Venus), as to which of them was the most beautiful, the goddess Eris (Strife) having revengefully flung among them, at a feast to which she had not been invited, a golden apple (of discord) inscribed *To the Most Beautiful*. Each of the three endeavored to bribe Paris. Hera promised him dominion over Asia and wealth; Athene, military renown and wisdom; Aphrodite, the fairest of women for his wife—to wit, Helene, wife of the Lacedæmonian king, Menelaus. P. decided in favor of Aphrodite, hence the animosity which the other two goddesses displayed against the Trojans in the war that followed. P. proceeded to seek Helene, whom he carried away from Lacedæmon in her husband's absence. 'The rape of Helen' is the legendary cause of the Trojan war, on account of which P. incurred the hatred of his countrymen. He deceitfully slew Achilles in the temple of Apollo. He was himself wounded by a poisoned arrow, and went to Mount Ida to be cured by CEnone, who possessed great powers of healing; but she avenged herself for his unfaithfulness to her by refusing to assist him, and he returned to Troy, and died. He was often represented in ancient works of art, generally as a beardless youth, of somewhat effeminate beauty.

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PARIS, *pär'is*, F. *pâ-ré'*, LOUIS PHILIPPE ALBERT D'ORLEANS, Comte DE: 1838, Aug. 24—1894, Sep. 8: son of the late Duc d'Orleans, and grandson of the former king, Louis Philippe. When 4 years of age he lost his father, and 6 years later on the outbreak of the revolution, fled from Paris with his mother and brother. His education was continued in England and Germany under the oversight of his mother. After her death, 1858, he travelled in the East; and with his brother and an uncle, Prince de Joinville, came to the United States 1861. In the civil war the brothers served for 10 months on the staff of Gen. McClellan. The Comte de Paris and his cousin, Princess Marie Isabelle, eldest daughter of the Duc de Montpensier, were married 1864. During the 'cotton famine' in England he investigated the condition of the mill operatives, and afterward published *Workmen's Associations in England* (1869). This was followed by political books, and a *History of the Civil War in America* (6 vols. 1874-84), which is regarded as a standard work. He was allowed to return to France, became a member of the national assembly 1871, and on the death of the Comte de Chambord 1883 he became the recognized head of the royal house. He was exiled 1836, retired to England, and 1887 issued a call to the French people to overthrow the republic and re-establish a monarchy. He gave his influence to the cause of Gen. Boulanger 1889, and visited the United States and Canada 1890, October.

PARIS, MATTHEW OF: the best Latin chronicler of the 13th c., and one of the most important writers in connection with Eng. mediæval history: b. about 1195; d. after 1259, May. His origin was doubtless English; he may have been born in Paris, or studied in the univ. there—whence his surname. He entered the Eng. Benedictine monastery of St. Albans 1217, Jan. 21. After the departure of Roger of Wendover, 1235, Matthew was chosen to succeed him as annalist of the monastery. He discharged his functions with a veracity and boldness, which greatly displeased some of his contemporaries. The principal external incident of his life was his voyage to Norway, whither he was invited by King Hakon, to repair the financial disorders in the Benedictine monastery of Holm. P. landed at Bergen 1248, July 10; and settled the business about which he came. After his return to England, he stood high in the favor of Henry III., who used to converse with him in the most familiar manner, and from whose lips he derived not a little of the information that makes his *Chronicle* so valuable. He had also a wide circle of friends and acquaintances among the clergy, from whom he obtained materials for his work. P. had great repute in his day for virtues and abilities. He was considered a universal scholar. He was a patriotic Englishman, and though a sincere Catholic (like all good men of his age), yet he wrote so fiercely against the encroachments of the court of Rome in ecclesiastical matters, that his *Chronicle* be-

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came, in after times, a great favorite with the Reformers. P.'s principal work is his *Historia Major*, which begins with the Norman Conquest, and extends to the year of the author's death. It was continued by William Rishanger, also a monk of St. Albans, till the death of Henry III. 1272. The first ed. was published at London by Abp. Parker 1571, and was reproduced at Zürich 1606; later and more complete editions are those of London 1640-1, and 1684. The only portion of the *Historia Major*, however, properly the work of P., is that 1235-59; the previous part being nearly a transcription from the *Flores Historiarum*, attributed to Roger of Wendover, whence some critics have supposed that P. is really the author of that work too. But this opinion is strenuously contested by the most recent editor of the *Flores Historiarum*, the Rev. H. O. Coxe (4 vols. 1841-2). Translations both of P.'s *Chronicle* and that of Roger of Wendover have been published by Bohn in his Antiquarian Library. The British Museum, and the library of Corpus Christi College at Cambridge, contain MS. abridgments of the *Historia Major*, by P. himself, entitled *Chronica Majora Sancte Albani*; a second abridgment is known as the *Historia Minor*. Other works of P.'s are *Duorum Offarum Merciorum Regum Vitæ*; *Viginti trium Abbatum, S. Albani Vitæ*; and *Additamenta*, being explanatory additions to his *Historia Major*.

PARIS, PLASTER OF: see GYPSUM.

PARIS BASIN: collective name of the beds of Eocene age, which rest in a hollow of the chalk in the district around Paris, where they occupy an oblong area 180 m. in greatest length n. to s., and 90 m. in breadth from e. to west. For the different sections into which the series has been divided, see EOCENE. The beds are remarkable chiefly for the treasure of organic remains which they supplied to Cuvier, and which led to the foundation of the modern science of Paleontology. The strata from which principally these were obtained consist of a series of white and green marls with subordinate beds of gypsum; they are largely developed at Montmartre, where the gypsum has been extensively quarried for manufacture of plaster of Paris. The fossils comprise land and fluviatile shells, fresh-water fish and crocodiles, and the bones of birds and quadrupeds, besides a few land-plants, including some palms. The mammals, of which about 50 species have been described, belong to the order Pachydermata. The P. B. has for some time almost ceased to supply the remains of vertebrate animals.

PARIS GREEN: see INSECTICIDES: ARSENIOS ACID.

## PARISH.

PARISH, n. *păr'ish* [F. *paroisse*—from mid. L. *parœcĭā*; Gr. *paroi'kiā*, an ecclesiastical district or neighborhood: Gr. *paroikos*, dwelling beside another—from *para*, by, near; *oikos*, a house]: term denoting the congregation, with the territory often vaguely defined, pertaining to a local church. In La. the term denotes what is known in the other states as a county. In Britain, an ecclesiastical division of a town, etc., subject to the oversight and ministry of one pastor. Besides these ecclesiastical parishes there are in Britain also civic parishes; such a parish is a district having its own offices for the legal care of the poor, etc. (see below). PARISH, a. pertaining to a parish; maintained by a parish. PARISH-CLERK, in England, official whose duty is to lead the responses during the reading of the service in the parish church. He is appointed by the parson, unless some other custom of a peculiar kind exists in the parish. He must be 20 years of age, and has his office for life, but is removable by the parson for sufficient cause. A person in holy orders may be elected P.-clerk. Under some of the church building acts governing the new churches built in populous parishes, he is annually appointed by the minister. The salary of the P.-clerk is paid out of the church rate. PARISHIONER, n. *pă-rĭsh'ŭn-ēr*, a native or an inhabitant of a parish.—A *Parish* is the district assigned to a particular church, where the inhabitants of the district may attend public worship, and receive the sacramental or other ministrations of the clergy. The name seems originally to have designated the first Christian congregations, which, being formed in the cities, became centres around which rural congregations were formed—these congregations dependent on the metropolitan one, and becoming included as part of its parish. Thus the word gradually came to be applied to the districts subject to the spiritual jurisdiction of a bishop; and on the other hand, at a later period, *diæcesis* was sometimes used to signify a parochial church or district. The distribution into strictly defined parishes appears to have grown up gradually, at dates differing in different lands. In the city of Rome there were 40 parish churches before the close of the 3d c.; parishes are found in France early in the 5th c.; the earliest trace in England is about 970. The Episcopalian view is that originally all the clergy were but coadjutors of their bishop, and served in his church, at which all the faithful assembled. At Alexandria, and afterward at Rome, a number of minor churches were opened (called at Rome *tituli*), served by clergy, in the earliest period not permanently attached to them, but sent from the principal or bishop's church, but in progress of time fixed permanently in the charge. This, however, was not common; and we find churches with clergy permanently attached, much earlier in rural districts than in cities. The institution does not appear to have become general till the 9th or 10th c. In England, the first legislation on the subject occurs in the

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laws of Edgar, about 970. The parochial division of districts seems in great measure to have followed the civil distribution into manors, or other feudal divisions of territory; and it is probable that to the same state of things is due the practice of lay patronage, the priest officiating in a manorial church being chosen, with the bishop's consent, by the lord of the manor. The parochial revenue, however, did not follow the rules which now prevail. At first, all ecclesiastical income, from whatever district, was carried into a common fund, which was placed at the disposal of the bishop, and was generally divided into four parts—for the bishop, for the clergy, for the poor, and for the church. By degrees, however, beginning with the rural parishes, and ultimately extending to those of the cities, the parochial revenues were placed at the disposal of the parish clergy (subject to a similar general threefold division, for the clergy, for the poor, and for the church); and in some places an abusive claim, which was early reprobated, arose on the part of the lord of the manor to a portion of the revenue. Properly, a P. has but one church; but when the district is extensive, one or more minor (*succursal*) churches, sometimes called 'chapels of ease,' are permitted.

In the law of England, a P. is an important subdivision of the country, for purposes of local self-govt., most of the local rates and taxes being confined within that area, and to a certain extent self-imposed by the parties who pay them. The origin of the division of England into parishes is not clearly ascertained from the authorities. Some have asserted that the division had an ecclesiastical origin, and that a P. was merely a district sufficient for one priest to attend to. But others have asserted that parishes had a civil origin long anterior to ecclesiastical distinctions, advantage being merely taken to ingraft these on so convenient an existing subdivision of the country; and that a P. was a subdivision of the ancient hundred, known as a vill or town, and through its machinery the public taxes were anciently collected. (See PATRONAGE, ECCLESIASTICAL.) Hobart fixes the date of the institution of civil parishes in 1179, and his account has been generally followed. Much difficulty has occasionally arisen in fixing the boundaries of parishes. Blackstone says the boundaries of parishes were originally ascertained by those of manors, and that it very seldom happened that a manor extended over more parishes than one, though there were often many manors in one parish. Nevertheless, the boundaries of parishes are often intermixed, which Blackstone accounts for by the practice of the lords of adjoining manors obliging their tenants to appropriate their tithes toward the officiating minister of the church, which was built for the whole. Even in the present day, these boundaries often give rise to litigation, and the courts have always decided the question according to the proof of custom. This custom is established chiefly by the

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ancient practice of perambulating the parish in Rogation-week in each year: see PERAMBULATION OF PARISHES.

One of the chief characteristics of a P. is, that there is a parish church, with an incumbent and churchwardens attached, and by this machinery the spiritual wants of the parishioners are attended to. These several P. churches, and the endowments connected therewith, belong to the nation, and the incumbents are members of the Established Church of England, and amenable to the discipline of the bishops and the spiritual courts. The private patronage, or right of presenting a clergyman to an incumbency, technically called an Advowson (q.v.), is generally held by an individual as a saleable property, having a market value. The patron has an absolute right (quite irrespective of the wishes of the parishioners) to present a clerk or ordained priest of the Church of England to a vacant benefice, and it is for the bishop to see to his qualifications. The bishop is the sole judge of these qualifications; and if he approves of them, the clerk or priest is instituted and inducted into the benefice, which ceremony completes his legal title to the fruits of the benefice. The incumbents of P. churches are called rectors, or vicars, or perpetual curates, the distinction being founded chiefly on the state of the tithes. When the benefice is full, then the freehold of the church vests in the rector or parson, and so does the churchyard; but he holds these only as trustee for use of the parishioners. There are certain duties which the incumbent of the P. church is bound by law to perform for the benefit of the parishioners. He is bound, as a general rule, to reside in the parish, so as to be ready to administer the rites of the church to them: see NON-RESIDENCE. The first duty of the incumbent is to perform public worship in the P. church every Sunday, according to the form prescribed by the Book of Common Prayer, which is part of the statute-law of England. He must adhere strictly to the forms and ceremonies and even to the dress prescribed by the Book of Common Prayer and Canons. The incumbent is bound also to baptize the children of all the parishioners, and to administer the rite of the Lord's Supper to the parishioners not less than three times each year. The incumbent is bound also to allow the parishioners to be buried in the churchyard of the P., if there is accommodation, and to read the burial-service at each interment. He is bound also to marry the parishioners on their tendering themselves, and complying with the marriage acts, within the P. church during canonical hours; and it is said that he is liable to action for damages if he refuse. Fees are frequently payable by custom for marriages and burials; but unless such custom exists, no fee is exigible. Another incident of the P. church is, that there must be churchwardens appointed annually—who are accordingly leading parochial officers—whose duty is partly ecclesiastical and partly civil.



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Their civil duties consist chiefly in this, that they must join the overseers in many of the duties arising out of the management of the poor, and incidental duties imposed by statute: but their primary duty is to attend to the repair and good order of the fabric of the church. The common law requires that there should be two churchwardens, one of whom is appointed by the incumbent, and the other is chosen by the parishioners in vestry assembled, but sometimes this rule is varied by local custom. This appointment and election take place in Easter-week of each year. In electing the people's churchwarden, there is often much local excitement; and it is common to poll the parish, all those who pay poor-rates being entitled to vote, the number of votes varying according to the rent, but no person having more than six votes: see CHURCH-WARDEN: CHURCH RATES.

The next most important business connected with the P. is that which concerns the poor, the leading principle being, that each union is bound to pay the expense of relieving its own poor: see OVERSEERS: GUARDIAN: POOR.

Another important feature of the P. is, that all the highways within the parish must be kept in repair by the P., i.e., by the inhabitants who are rated to the poor. For this purpose, the inhabitants of each P., in vestry assembled, appoint each year a surveyor of highways, whose duty it is to see that the highways are kept in good repair; and he is authorized, by the General Highway Act, to levy a rate on all the property within the parish. The office of a surveyor of highways is compulsory and gratuitous, like those of churchwarden, overseer, and guardian. The late Highway District Acts, passed first 1862, enable the justices of the peace of the district to combine several parishes into one district, in order to secure more uniformity in the repairs of the highways.

The above duties in reference to the P. church, the poor, and the highways, are the leading duties attaching to the P. as a parish; but besides these, many miscellaneous duties have been imposed on the P. officers, particularly on the overseers and churchwardens: see OVERSEERS. In nearly all cases where the P., as a parish, is required to act, the mode in which it does so is by the machinery of a vestry. A vestry is a meeting of all the inhabitant householders rated to the poor. It is called by the churchwardens, and all questions are put to the vote. Any ratepayer who thinks the majority of those present do not represent the majority of all the parishioners is entitled to demand a poll. At these meetings, great excitement often prevails, especially when there are church rates. Wherever a P. improvement is found desirable, the vestry may meet and decide whether it is to be proceeded with, in which case they have powers of rating themselves for the expense. Such is the case as to the establishment of baths and wash-houses, watch-

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ing, and lighting. Returns are made of all P. and local rates to parliament every year. The P. property, except the goods of the P. church, which are vested in the churchwardens, is vested in the overseers, who hold and manage the same, requiring the consent of the Poor-law Board in order to sell it. For the elementary education system, and for school-boards as local authorities of districts (not necessarily parishes), see EDUCATION, NATIONAL OR STATE.

In Scotland, the division into parishes has existed from the most ancient times, and is recognized for certain civil purposes relative to taxation and otherwise, as well as for purposes purely ecclesiastical. The court of session may unite two or more parishes into one; or may divide a parish, or disjoin part of it, with consent of the heritors (or landholders) of a major part of the valuation; or without their consent, if it be shown that there is within the disjoined part a sufficient place of worship, and if the titulars of Teinds (q.v.), or others who have to pay no less than three-fourths of the additional stipend, do not object. By Act 7 and 8 Vict. c. 44, any district where there is an endowed church of the established Presb. order may be erected into a P. *quoad sacra*, for such purposes as are purely ecclesiastical. Endowed Gaelic congregations in the large towns of the Lowlands may similarly be erected into parishes *quoad sacra*. The principal application of the parochial division for civil purposes relates to the administration of the poor-law. The Board of Supervision may unite two or more parishes into a combination for poor-law purposes. There is not the same extensive machinery for parochial self-government as in England. The burden of supporting the fabric of the church falls on the heritors, and there are no churchwardens. Highways are not repairable by the parish, and there are no elections of surveyors or way-wardens. The meeting of the inhabitants in vestry, frequent in England, is unknown in Scotland; hence the ratepayers do not interest themselves so much in local affairs. Many of the duties which in England are discharged by parochial officers are in Scotland discharged by the sheriff-clerk, a county-officer. The system of having a Parish School (q.v.) in every parish (a system extended by the Education Act of 1872) has long prevailed in Scotland, though unknown in England till 1870.

PARISH SCHOOL: school pertaining to or controlled by a local church; in the United States called usually Parochial School: in England, a school for the benefit of the parishioners, endowed by the state, or supported by taxes on the parishioners. Prior to the Education Act of 1870, there was no such school in England: every school beyond charity schools was more or less voluntary in its character, and endowed, if at all, by private benefactors. In Scotland, however, it was essential that in every parish there should be a P. S., for a statute of

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1696 made it compulsory on the heritors—i.e., the chief proprietors—to provide a school-house, and to fix a salary for the teacher. If the heritors neglected to supply a school-house, the presbytery was empowered to order one at the expense of the heritors. The qualification of the schoolmaster consisted in passing an examination conducted by the examiners of parochial schoolmasters, who were professors of the universities, who made regulations as to the time and mode of examination: for this purpose, Scotland was divided into four districts, each in connection with one of the Scotch universities. The schoolmaster, who, under the old law, before admission to office, had been required to sign the Westminster Confession of Faith and the formula of the Church of Scotland, and to profess that he would submit to its government and discipline, had by this act merely to make a declaration that he would not, in his office, endeavor, directly or indirectly, to teach or inculcate opinions opposed to the divine authority of the Holy Scriptures, or to the doctrines contained in the Shorter Catechism, agreed upon by the Assembly of Divines at Westminster, and approved by the General Assembly of the Church of Scotland, and that he would not exercise the functions of his office to the prejudice or subversion of the Church of Scotland as by law established. Notwithstanding these and other improvements, it continued apparent that the system of parish schools had fallen behind the requirements of the country, when the population had tripled, and large manufacturing villages and towns had sprung up in rural districts. But for denominational and other schools, vast numbers of children would have been left without the rudiments of education. By the Education (Scotland) Act (1872), the parish schools were placed under the management of the school board of each parish, the jurisdiction of heritors, ministers, presbyteries, and other church courts was abolished, and every school under the management of the school board was declared to be equally a parish school.—See EDUCATION, NATIONAL OR STATE.

PARISIAN, n. *pă-riz'î-ăn*: a native or inhabitant of the city of *Paris*.

PARISYLLABIC, a. *păr'î-sil-lăb'îk* [L. *par* or *parem*, equal; *syllaba*, a syllable]: having an equal number of syllables in all its inflections.

PARITOR, n. *păr'î-tôr* [mid. L. *paritor*, a servant—contr. from *apparitor*]: a summoner of the courts of civil law.

PARITY, n. *păr'î-tî* [F. *parité*; L. *paritas*, equality—from *par*, equal: It. *parita*]: the condition of being equal or equivalent; equality; close resemblance; analogy.

## PARK.

PARK, n. *pârke* [F. *parc*, an inclosure—from mid. L. *parcus*: Dan. *park*; It. *parco*; AS. *pearroc*; Ger. *pferch*; Gael. *páirc*, a park, an inclosure]: inclosed or assigned portion of land, in or near a town, for public use and for amusement or exercise: lawn, woodland, and pasturage around a mansion, so far as pleasure-walks or drives extend.—In the United States, the name is applied also to great reservations including remarkable scenery or natural objects, reserved for public resort. In *milit.*, the train of heavy artillery, with horses, carriages, equipment, ammunition, etc., which accompanies an army to the field: it is placed where rapid access can be had to the line of the army in any part, and where the divisions of the force can easily mass for its protection. The horses of the park are picketed in lines in its rear. Also, the term *Park* is applied sometimes to the whole collection of tools, etc., belonging to the engineer department of the army. PARK, v. to inclose, as a park; to bring into a compact body, as artillery. PARK'ING, imp. PARKED, pp. *pârkt*. Note.—PADDOCK is related to PARK through OE. *parrok*, AS. *pearroc*, a park, of either of which PADDOCK is a mere corruption.

PARK, *pârke*, EDWARDS AMASA, D.D., LL.D.: theologian: b. Providence, R. I., 1808, Dec. 20; son of Calvin Park, D.D. He graduated from Brown Univ. 1826, and from Andover Theol. Seminary 1831, and was then settled for about two years over a Congl. church in Braintree, Mass. After being prof. of mental and moral philosophy and Hebrew literature at Amherst College 1835-6, he became prof. of sacred rhetoric in the theol. seminary at Andover, and 1847 prof. of Christian theology in the same institution. This chair he retained till 1881, when he retired from active service, but was made prof. emeritus. He was a strong advocate of the system known as the New England Theology. When 20 years of age, he commenced writing for religious periodicals, and he has been a voluminous contributor to this class of journals. In connection with Prof. Bela B. Edwards, he started the *Bibliotheca Sacra* 1844, acting as associate editor till 1851 and as editor-in-chief 1851-84, making an unbroken editorial connection of 40 years with this important publication, which then held the rank of the leading theol. publication in this country. He published in pamphlet form memoirs of many eminent men; including Profs. Moses Stuart and Bela B. Edwards, of Andover Seminary; the Rev. Dr. Richard S. Storrs, of Braintree, Mass.; and the Rev. Dr. Leonard Woods, pres. of Bowdoin College. He edited several works, to some of which he furnished introductions; wrote a *Memoir of the Life and Character of Samuel Hopkins, D.D.* (1852), which appeared with a collection of Hopkins's works and soon passed to a second edition; a memoir of 370 pages to accompany *The Writings of Prof. B. B. Edwards* (1853); and a *Memoir of*

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*Nathanael Emmons* (1861), which appeared in Vol. I. of Dr. Emmons's theological works and was afterward issued by itself. With Austin Phelps, D.D., and Lowell Mason, Mus.D., he compiled *The Sabbath Hymn-Book* (1858), which has had an immense sale; and with Dr. Austin Phelps and Dr. Daniel L. Furber published *Hymns and Choirs* (1860). For the latter work he wrote an elaborate essay on *The Text of Hymns*. He also published a pamphlet on *The Associate Creed of Andover Theological Seminary* (1883), and a volume entitled *Discourses on Some Theological Doctrines as Related to the Religious Character* (1885). He spent considerable time in Europe 1842-3; 1862-3; and in Europe, Egypt, and Palestine 1869-70. He has strongly antagonized the 'new departure of recent years' at the Andover Theological Seminary, and strenuously opposed any deviation from the historic standards of the doctrines taught at that institution.—Dr. P. was for many years noted for marvellous acuteness of thought, for a literary style faultlessly pure and of rare vigor and grace, and for a finished and impressive delivery in the pulpit. His lectures drew admiring and enthusiastic classes to Andover, and were recognized as communicating to his students an unusual mental stimulus. These lectures—it is understood—are to be published.

PARK, MUNGO: famous African traveller: 1771, Sep. 10—1805 or 6; b. at Fowlshiels, near Selkirk, Scotland; son of a farmer. He studied medicine in Edinburgh, and afterward went to London, where he obtained the situation of assistant-surgeon in a vessel bound for the E. Indies. When he returned 1793, the *African Association* of London had received intelligence of the death of Major Houghton, who had undertaken a journey to Africa at their expense. P. offered himself for a similar undertaking, was accepted, and sailed from England 1795, May 22. He spent some months at the English factory of Pisania on the Gambia, making preparations for his further travels, and learning the Mandingo language. Leaving Pisania Dec. 2, he travelled eastward; but when he had nearly reached the place where Houghton lost his life, he fell into the hands of a Moorish king, who imprisoned him, and treated him so roughly, that P. seized an opportunity of escaping (1796, July 1). In the third week of his flight, he reached the Niger, the great object of his search, at Segou, in the kingdom of Bambarra, and followed its course downward as far as Silla; but meeting with hindrances that compelled him to retrace his steps, he pursued his way w. along its banks to Bammakoe, and then crossed a mountainous country till he came to Kamalia, in the kingdom of Mandingo, Sep. 14, where he was taken ill, and lay for seven months. A slave-trader at last conveyed him again to the English factory on the Gambia, where he arrived 1797, June 10, after an absence of 19 months. He published after his return to Britain, *Travels in the Interior of Africa* (Lond. 1799), a work which at once ac-

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quired high popularity. He then married and settled as a surgeon at Peebles, where, however, he did not acquire an extensive practice; and 1805, he undertook another journey to Africa, at the expense of the govt. When he started from Pisania, he had a company of 45, of whom 36 were European soldiers; but when he reached the Niger in Aug., his attendants were reduced to seven, so fatal is the rainy season in those regions to Europeans. From Sansanding on the Niger, in the kingdom of Bambarra, he sent back his journals and letters 1805, Nov., to Gambia; and built a boat, in which he embarked, not, as he should have done, with native assistants habituated to the country, but with four European companions, and reached the kingdom of Houssa; where he and they are believed to have been murdered by the natives, or drowned as they attempted to sail through a narrow channel of the river. The fragments of information and other evidence picked up among the natives by Clapperton and Lander (q.v.), strongly confirm the last view of the fate of P. and his companions. An account of P.'s second journey was published at London 1815. P.'s narratives are of considerable value, particularly for the light which they throw upon the social and domestic life of the negroes, and on the botany and meteorology of the regions through which he passed; but he was unfortunately cut off before he had determined the grand object of his explorations—the discovery of the course of the Niger. It is evident that he lacked the sagacity and foresight requisite for a great explorer, though he showed high courage and indomitable perseverance.

PARKA, *pâr'ka*: name given by Fleming to a fossil from the Old Red Sandstone, about which there has been much difference of opinion. The quarrymen call them 'berries,' from their resemblance to a compressed raspberry. They were compared by Fleming to the panicles of a *Juncus*, or the globose head of a *Sparganium*. Lyell thinks that they resemble the egg-cases of a *Natica*, while Mantell suggested that they were eggs of a batrachian. The general opinion now is that they are eggs of the *Pterygotus*.

PARKE, *pârk*, JOHN: 1754, Apr. 7—1789, Dec. 11; poet; born Dover, Del. He was educated at the Univ. of Pennsylvania, served through the revolutionary war, entering the quartermaster's dept., and by various promotions reaching the rank of lieut.col. After the war he resided several years in Philadelphia, then removed to Va. He published a peculiar book entitled *The Lyric Works of Horace, translated into English Verse, to which are added a number of Original Poems by a Native of America* (1783). **He died near Dover.**

## PARKE—PARKER.

PARKE, JOHN GRUBB: 1827, Sep. 22; b. near Coatesville, Penn. He graduated from the West Point Milit. Acad. 1849, was connected with the topographical engineers, made surveys in the central and western states, and was chief of the force engaged 1857-61 in locating the United States n.w. boundary. He was made brig. gen. vols. 1861, Nov. 23, was with Gen. Burnside in N. C., was in the battles of South Mountain, Antietam, and Fredericksburg, served in Miss., and Tenn., and aided in the capture of Lee's army. He was engaged in surveying and engineering operations 1866-87, in the latter year became supt. of West Point Milit. Acad.; and at his request was retired 1889, June, under the 40 years' service law. He was brevetted lieut.col., col., brig.gen. and maj.gen. U. S. army; and promoted maj.gen. vols. 1862; lieut.col. of engineers 1879, and col. 1884. He has published several books and reports.

PARKER, *pâr'kér*: family distinguished in the annals of the British navy.—The founder of the family was Sir HUGH PARKER, alderman of London, who received a baronetcy 1681.—His grand-nephew, Sir HYDE PARKER, commanded the British fleet in the action off the Dogger Bank, 1781, Aug. 5, in which three Dutch ships were destroyed, and the rest of the Dutch fleet compelled to retreat into harbor. In 1783 he was appointed to command the British fleet in the E. Indies; but the ship in which he sailed thither was lost, with all on board.—His second son, Sir HYDE PARKER, distinguished himself in the American war; blockaded the Dutch harbors with a small squadron 1782; commanded the British fleet in the W. Indies 1795; and 1801 was appointed to chief command of the fleet sent to the Baltic to act against the armed coalition of the three states of Russia, Sweden, and Denmark. He had no share in the battle of Copenhagen, in which Nelson engaged contrary to his orders; but by his appearance before Carlscrona, he compelled the neutrality of Sweden; and he was on the point of sailing for Cronstadt, when the news of Czar Paul's death put an end to hostilities.—His kinsman, Sir WILLIAM PARKER, was also a British admiral of high repute for skill and bravery, and contributed to some of the great victories of the close of last century.—Sir PETER PARKER, 1716-1811, admiral of the fleet, served with distinction during the Seven Years' and the American wars; and 1782 brought the French admiral, De Grasse, prisoner to England, for which he received a baronetcy.—Sir WILLIAM PARKER, 1781-1866, commanded the frigate *Amazon* 1806, and took, after a hard battle, the French frigate *La Belle Poule* belonging to the squadron of Admiral Linois; and 1809 captured the citadel of Ferrol. In 1841 he succeeded Admiral Elliot in command of the fleet in the Chinese seas during the first Chinese war; took possession of Chusan, Ningpo, and Shapu; forced the entrance of the Yang-tze-kiang; and arrived under the walls of Nanking, where the treaty of peace was agreed upon. For these services, he received a baronetcy

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1844. In autumn 1849 he sailed to the Dardanelles, at the request of Sir Stratford Canning (afterward Lord Stratford de Redcliffe), to support the Porte against the threatening demands of Austria and Russia concerning political fugitives. In 1851 he was made Admiral of the Blue, 1853 Admiral of the White, 1858 Admiral of the Red, and 1862 Rear Admiral of the United Kingdom.

PARKER, *pâr'kèr*, AMASA JUNIUS, LL.D.: 1807, June 2—1890, May 13; b. Sharon, Conn.; son of the Rev. Daniel P. He graduated from Union College 1825, and commenced law practice at Delhi, N. Y., 1828. He was a member of the state legislature 1834, of congress 1837-39, vice-chancellor of N. Y. 1844-47, and judge of the state supreme court 1847-55, after which he practiced law in Albany. He was defeated as democratic candidate for gov. of N. Y. 1856 and 58, was appointed dist. atty. 1859, but declined to serve, and was a delegate to the state constitutional conventions 1867 and 8. He was a trustee of Cornell Univ. and of Union College; published law reports (6 vols.), and aided in preparation of the *Revised Statutes* (3 vols. 1859). He died at Albany.

PAR'KER, CORTLAND, LL.D.: 1818, June 27; born Perth Amboy, N. J.; son of James P. He graduated from Rutgers College 1836, commenced the study of law under Theodore Frelinghuysen, and when the latter was made chancellor he entered the Univ. of New York, from which he graduated 1839. He practiced law in Newark, N. J., and soon rose to eminence. He aided in revising the N. J. state laws 1875, and was a member of the commission which located the disputed boundaries of N. J. and Del. He has been defeated when a candidate for the United States senate, and attorney-general of N. J.; and has declined the U.S. missions to Russia and Austria.

PAR'KER, EDWIN POND, S.T.D.: born Castine, Me., 1836, Jan. 13. He graduated from Bowdoin College 1856, and from Bangor Theol. Seminary 1859; and was ordained and installed pastor of the Second Church of Christ (Congl.) in Hartford, Conn., 1860, Jan. 11, which office he still holds 1890. The degree S.T.D. was conferred on him by Yale College 1872. He has written largely for secular and religious papers and magazines, has published various pamphlets, and the *Book of Praise* (1868); *Christian Hymnal* (1879); *Thirty Years Ago* (1890).

PAR'KER, ELY SAMUEL: born in the Indian reservation, Tonawanda, N. Y., about 1828. He belonged to the Seneca tribe, and was chief of the Six Nations. He became a civil engineer; in the war against secession was a member of the staff of Gen. Grant, and toward the close of the war became one of his secretaries. He was appointed capt. 1863; received numerous brevets, including brig.-gen. vols., and brig.-gen. U.S. A.; was appointed 1st lieut. cavalry 1866, and resigned 1869, Apr. 26. He was commissioner of Indian affairs 1869-71, and resigned to follow his profession. He d. 1895, Aug. 31.



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PAR'KER, FOXHALL ALEXANDER: naval officer: 1821. Aug. 5—1879, June 10; b. New York; son of Capt. F. A. Parker. He graduated from the Philadelphia naval school 1843, was an officer in the navy-yard, Washington 1861-2, assisted in preparing the Army of the Potomac, drilled a large number of seamen in the use of arms and artillery, commanded the *Mahaska*, and afterward the *Wabash*, and from 1863, Sep., till the close of the war was in command of the Potomac flotilla, and was in numerous engagements. He was chief signal officer of the navy 1873-76 and supt. of the Annapolis Naval Acad. 1878 till his death. He became lieut. 1850, commander 1862, captain 1866, commodore 1872. He was a founder of the Naval Institute, a contributor to the press, and published *The Fleets of the World* (1876); *The Battle of Mobile Bay* (1878); and several works used as text-books in the naval academy.

PARKER, HENRY WEBSTER, D.D. : 1824, Sep. 7 — — — ; b. Danby, N. Y. : minister, teacher, and author. He graduated from Amherst, 1843, and from Auburn Theol. Sem. ; was pastor of a Congl. church in Brooklyn, and later of one in New Bedford, Mass., but resigned on account of the failure of his voice. After studying science at Harvard, he was prof. of chemistry in Iowa college, then of mental science and nat. history in Mass. Agricultural College 1870-79, and in the latter year became again prof. in Iowa college. He has written largely for literary and art journals and reviews, and for cyclopedias ; has published two vols. of poems, and a philosophical treatise entitled *The Spirit of Beauty*.

PAR'KER, JOEL, LL.D. : jurist: 1795, Jan. 25—1875, Aug. 17; b. Jaffrey, N. H. He graduated from Dartmouth College 1811, studied law, was appointed associate justice of the state supreme court 1833, chief-justice 1836, and was law prof. in Harvard from 1847 till his death. He was in the state legislature 1824-26 and chairman of the committee which revised the state laws 1840. He published numerous reports, essays, and addresses, and several books, including *Revolution and Reconstruction* (1866), and *Conflict of Decisions* (1875). He died at Cambridge, Mass.

PAR'KER, JOHN HENRY, C.B. : architectural archeologist: 1806-1884, Jan. 31; b. London. After obtaining an education he became a bookseller 1821, succeeded his uncle, Joseph P., in the same business at Oxford 1832, and was very successful. He gave much time to architectural studies, favored the restoration of ancient ecclesiastical buildings, and made extensive excavations in Rome to determine the historical basis of numerous tales which had been regarded as legendary. In recognition of his archeological discoveries, the king of Italy conferred on him a decoration, and Pope Pius IX. presented him a medal. He wrote several valuable works.

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PARKER, MATTHEW, D.D.: second Prot. archbishop of Canterbury: 1504, Aug. 6—1575, May 17; b. Norwich. He studied at Corpus Christi College, Cambridge, and was ordained priest 1527. At the univ., he was a distinguished student, especially of the Scriptures and of the history of the church, even to antiquarian minuteness; yet, in spite of his strong leaning to the past, he was from an early period favorably disposed toward the doctrines of the Reformation, and lived in close intimacy with some of the more ardent reformers. In 1533 he was appointed chaplain to Queen Anne Boleyn, who thought very highly of him, and not long before her death, exhorted her daughter Elizabeth to avail herself of P.'s wise and pious counsel. In 1535 he obtained the deanery of the monastic college of Stoke-Clare in Suffolk—*Roman Catholicism* being still the professed religion of the land, for Henry had not yet formally broken with the pope—and here P. continued his pursuit of classical and ecclesiastical literature, and set himself to correct the prevailing decay of morals and learning in the church, by founding a school for instruction in grammar and humanity. Here he appears to have definitely sided with the reforming party in the church and state—the sermons which he preached containing bold attacks on Rom. Cath. tenets and practices. In 1538 P. took the degree D.D.; and 1544, after some minor changes, became master of Corpus Christi College, Cambridge, which he ruled admirably. Three years later, he married Margaret Harlstone, daughter of a Norfolkshire gentleman. It was probably about this time that he drew up his defense of the marriage of priests, *De Conjugio Sacerdotum*. In 1552 he was presented by King Edward VI. to the canonry and prebend of Covingham, in the church of Lincoln. On the accession of Queen Mary, he refused to conform to the re-established order, and was deprived of his preferments, and even compelled to conceal himself. It does not appear, however, that he was eagerly sought after by the emissaries of Mary; for he was no fanatic or iconoclast, but, on the contrary, though sincerely attached to the common Protestant doctrines, unwilling to disturb the framework of the church. P. spent at least some portion of his compulsory seclusion from public life in the enlargement of his *De Conjugio Sacerdotum*, and in translating the Psalms into English metre. The death of Mary, and the accession of Elizabeth, called him from his learned retirement; and he was appointed by the queen, abp. of Canterbury. The consecration took place in Lambeth chapel, 1559, Dec. 17. For the vain charge against the validity of this act, see NAG'S HEAD CONSECRATION.

'The subsequent history of Archbishop Parker,' it has been justly remarked, 'is that of the Church of England.' The difficulties that beset him were very great. Elizabeth herself was much addicted to various 'popish' practices, such as the reverence of images, and was

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strongly, even violently, in favor of the celibacy of the clergy: she went so far as to insult P.'s wife on one occasion. But his greatest anxiety was in regard to the spirit of sectarian dissension within the church itself. Already the germs of *Puritanism* were beginning to spring up, and there can be no doubt that their growth was fostered by the despotic caprices of the queen. P. himself was manifestly convinced that if ever Protestantism was to be firmly established in the land at all, some definite ecclesiastical forms and methods must be sanctioned, to secure the triumph of order over anarchy; so he vigorously set about the repression of what he thought a mutinous individualism incompatible with a catholic spirit. That in this he always acted wisely or unblamably, cannot be affirmed; his official situation was most difficult and trying for one who, like P., combined conscientious sincerity with a natural charitable-ness of spirit. In his office he was gradually drawn into intolerant and inquisitorial courses; and as he grew older, he grew harsher. To forbid 'prophesyings,' or meetings for religious discourse, was something very like persecution. Fuller (who must have his pun, however bad) says of him: 'He was a Parker indeed, careful to keep the fences.' His struggle against Puritanism involved a lasting injury to his reputation, as also to his health. Yet it must not be forgotten that to P. we owe the *Bishops' Bible*, undertaken at his request, carried on under his inspection, and published at his expense 1568. He had also a principal share in drawing up the *Book of Common Prayer*, for which his skill in ancient liturgies peculiarly fitted him, and which in many parts bears the impress of his generally broad, moderate, and unsectarian intellect. It was under his presidency, too, that the *Thirty-nine Articles* were finally revised and subscribed by the clergy (1562).

Among other literary performances, P. published an old *Saxon Homily on the Sacrament*, by Ælfric of St. Albans, to prove that Transubstantiation was not the doctrine of the ancient English church; edited the histories of Matthew of Westminster and Matthew of Paris (see PARIS, MATTHEW OF); and superintended the publication of a most valuable work, *De Antiquitate Britannicæ Ecclesiæ*, printed probably at Lambeth 1572, where the abp., we are told, had an establishment of printers, engravers, and illuminators. He also founded the 'Society of Antiquaries,' and was its first pres.; and endowed the Univ. of Cambridge, particularly his own college, with many fellowships and scholarships, and with a magnificent collection of MSS. relating to the civil and ecclesiastical condition of England, and belonging to nine different centuries (8th-16th). Of this collection, Fuller said that it was 'the sun of English antiquity before it was eclipsed by that of Sir Robert Cotton.'

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PAR'KER, PETER, M.D.: 1804, June 18—1888, Jan. 10; b. Framingham, Mass. He graduated from Yale 1831, studied theol., and graduated also from the medical department of the college. He was ordained 1834, and immediately sailed to China as a missionary under the auspices of the American Board. His first work was the establishment of a hospital at Canton. He was remarkably successful in treatment of diseases and injuries, and during the first year about 2,000 cases were treated. In addition to his medical and surgical work. P. held religious services and often preached at the hospital. He also gave medical and surgical instruction to Chinese students. In 1837 he visited Japan, and while the war between England and China was in progress, 1840-42, he lived in the United States. In 1842 he returned to his hospital work in China. About 3 years later he resigned his position with the American Board, became connected as interpreter and secretary with the U. S. embassy, and during the absence of the U. S. minister was *chargé d'affairs*. Failing health brought him to the United States 1855, but he soon returned as govt. commissioner to revise the treaty with China. In 1857 he settled at Washington, D. C. He was a regent of the Smithsonian Institution, one of the corporate members of the American Board, and was pres. of a branch of the Evangelical Alliance 1887. He published several books, including *Eulogy on Henry Wilson* (1880). He died at Washington.

PAR'KER, THEODORE: rationalistic preacher, reformer and scholar: 1810, Aug. 24—1860, May 10; b. Lexington, Mass. His grandfather was cap. of a militia company at the battle of Lexington; his father a farmer and mechanic of the New England type, strong in will and independent in thought; his mother a woman of delicate mind and of high moral ideals. His boyhood was spent at the district school, on the farm, and in the workshop. At the age of 17, he taught a school, and earned money to enter Harvard College 1830. During his collegiate course, he supported himself by teaching private classes and schools; and studied metaphysics, theology, Anglo-Saxon, Syriac, Arabic, Danish, Swedish, German, French, Spanish, and modern Greek. Entering the divinity class, at the end of his collegiate course, he began to preach 1836; was an editor of the *Scriptural Interpreter*, and settled as Unitarian minister at West Roxbury, Mass., 1837. The naturalistic or rationalistic views which separated him from the more conservative portion of the Unitarians attracted wide notice first in consequence of his ordination sermon in Boston 1841, on *The Transient and Permanent in Christianity*. In this sermon he denied the special authority of the Bible, of Christianity, and even of the Christ; and asserted that nothing in Christianity had any permanence except 'the absolute religion,' which he defined as pure morality, unhampered love to God, and love to man. The contest which arose on the anti-supernaturalism of this dis-

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course led him to develop his theological views in five lectures, delivered in Boston, pub. (1841) under the title *A Discourse of Matters Pertaining to Religion*; followed by *Sermons for the Times*. These radical and at times defiant public utterances led to a break between P. and the current Unitarianism of that day, which was not ready to discard the lordship of the personal Christ. Failing health induced P. to make an extended tour in Europe. In 1845 he returned to Boston, preached to large audiences at the Melodeon, and wrote for the *Dial*, *Christian Register*, *Christian Examiner*, and *Massachusetts Quarterly*. He became also a popular lecturer, and was active and earnest in opposition to slavery, the Mexican war, and the Fugitive Slave Law, for resisting which, by more than words, he was indicted. In the midst of his work, he was attacked, 1859, with bleeding from the lungs, and made a voyage to Mexico, where he wrote *Experience as a Minister*; thence he sailed to Italy, where he died at Florence. His works, chiefly miscellanies, lectures, and sermons, have been collected and published in America and England, in which his peculiar views in theology and politics are sustained with great keenness of argument and felicity of illustration. His library, 13,000 vols., he bequeathed to the Boston Public Library.—P.'s scholarship as a linguist was of extraordinary range; he had also a various learning. His intellectual movement was pervaded with moral sincerity, which gave it directness, vividness, and all the force that belongs to deep conviction. Thence, in the department of practical philanthropy, his fearless activity was exceedingly powerful and beneficent. In the realm of religious philosophy and criticism, his thought shows lack of accurate discrimination, and a frequently puzzling variation in definition—e.g., in his sometimes pantheistic, sometimes theistic, attitude. By this defect, his influence on religious thought was rendered far less abiding than his abilities would seem to warrant. His lack of taste and of delicate feeling is often perceptible in his works. Yet he is to be honored for his unquestionable sincerity, and for the courage of his assault on legalized wrong. See P.'s *Life and Correspondence*, by Weiss (1864).

PAR'KER, WILLARD, LL.D.: surgeon: 1800, Sep. 2—1884, Apr. 25; b. Hillsborough co., N. H. He taught school before and after graduation from Harvard 1826; studied medicine under Dr. John C. Warren, and graduated from the medical dept. at Harvard 1830. He was prof. of anatomy at the Berkshire Medical College 1830-33, and of surgery 1833-36, when he accepted a professorship in a medical college in Cincinnati. He visited Europe 1837, and was prof. of surgery in the New York College of Physicians and Surgeons 1839-69 and prof. of clinical surgery in the same institution 1869 till his resignation shortly before his death. He was remarkably skilful and successful in surgical operations, held the first college clinic in this country, and was a popular

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teacher. He was one of the leaders in organizing the Bellevue Hospital, and the Board of Health, in New York; was pres. of the N. Y. Inebriate Asylum at Binghamton for several years, and consulting surgeon to some of the principal hospitals in New York. He made several important discoveries, and valuable improvements on the methods of performing various surgical operations. Largely through his efforts a soc. to relieve needy widows and orphans of medical men was established 1846, and the New York Acad. of Medicine 1847. Of the latter soc. he was pres. for several years from 1856. He had little time for writing, but furnished some valuable articles to medical publications. He died in New York.

PARKERSBURG, *Pâr'kèrz-bèrg*: city, cap. of Wood co., W. Va., on the Baltimore and Ohio, the Baltimore and Ohio Southwestern, and the Ohio River railroads, and at the junction of the Little Kanawha with the Ohio river; 96 m. from Wheeling. There are 12 churches; a girls' seminary, and several public schools; 1 monthly, 3 weekly and 2 daily newspapers; 5 national banks (cap. \$756,000); 3 hotels; and a United States govt. building. A fine railroad bridge crosses the Ohio river. The streets are well laid out, there are water-works, gas-works, a fine park, and an organized fire dept. P. has extensive petroleum trade, and oil refining is a prominent industry. There are also several flour-mills, lumber mills, and large manufactures of furniture and other articles; besides railroad repair shops, machine-shops, and foundries. Many steamers ply on the rivers, and there is quite an exportation of timber to England. Pop. (1880) 6,582; (1890) 8,404; (1900) 11,703.

PARKES, *pârks*, Sir HARRY SMITH, G.C.M.G., K.C.B.: 1828-1885, Mar. 22; b. Birchill's Hall, Staffordshire, England; son of Harry P. He was educated in London, entered the govt. civil service in China 1852, and 1854 was appointed consul at Amoy. He was sec. to Sir John Bowring in his mission to Siam, carried the treaty papers to England 1855, and after their ratification returned to the East. He was consul at Canton 1856-58, was British commissioner at that port while it was occupied by the allies 1858-61, and was knighted for valuable services. He was imprisoned by the Chinese, and treated with great cruelty; became consul at Shanghai 1862; and was promoted to a higher degree of knighthood. In 1865 he was appointed minister and consul-gen. to Japan, which position he held 18 years. During this period he greatly aided Christian missionary operations in that country, and negotiated important commercial treaties between Japan and several European powers. He was appointed Brit. minister to Peking 1883, and held this office till his death.

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**PARKESINE**, *pârks'în* or *-ên*: artificial substitute for such natural substances as horn, ivory, bone, tortoise-shell, etc.; named after Parkes, of Birmingham, England. It is essentially the same as Celluloid (q.v.).

**PARKHURST**, *pârkhêrst*, CHARLES HENRY, D.D.: born Framingham, Mass., 1842, Apr. 17. He studied at Lancaster Acad., Mass., graduated from Amherst College 1836, was principal of the Amherst High School 1867-69, studied theology under Pres. J. H. Seelye, and later under Tholuck at Halle 1869-70, was prof. of Greek at Williston Seminary, Mass., 1870-72, and studied philosophy and theology at Leipzig 1872-3. He was pastor of the Congl. Church, Lenox, Mass., 1874-80, and 1880, Mar. 9, became pastor of the Madison Sq. Presb. Chh., New York. In 1891 he succeeded the late Howard Crosby, D.D., as pres. of the Soc. for the Prevention of Crime, and 1892, after personal investigation, charged the police dept. with aiding crime by failing to repress it. P. has published *The Latin Verb Illustrated by the Sanscrit* (1870); *The Blind Man's Creed, and Other Sermons* (1883); *Pattern in the Mount, and Other Sermons* (1885); and various smaller religious works; *Our Fight with Tammany* (1894).

**PARKHURST**, *pârkhêrst*, JOHN: English biblical scholar: 1723, June—1797, Mar. 21. He was educated at Rugby and at Cambridge. In 1762 appeared his Hebrew and English Lexicon—creditable for its time, and widely used, but long since entirely superseded by the works of critical scholars.

**PARKINSONIA**, *pâr-kîn-sô'nî-a*: genus of plants of nat. order *Leguminosæ*, sub-order *Cæsalpiniceæ*.—*P. aculeata* is a W. Indian shrub or small tree, which, in flower, is one of the most splendid objects in the vegetable kingdom. It has pinnated leaves, with winged leaf-stalk, and large yellow flowers spotted with red. It is furnished with strong spines, and is often used for hedges; whence it is called the Barbadoes Flower Fence. It is now common in India. The bark yields a beautiful white fibre, not very strong, but possibly available for paper-making.

**PARKMAN**, *pârkmân*, FRANCIS, JR., LL.D.: 1823, Sep. 16—1893, Nov. 8: historian; son of Francis P., D.D., and on his mother's side descended from the Rev. John Cotton. He graduated from Harvard College 1844, spent some time in European travel, and 1846 explored the Rocky Mountain region, where he formed the acquaintance of various Indian tribes and suffered hardships which permanently injured his health and caused partial blindness. He described his western tour in a series of sketches for the *Knickerbocker Magazine*, which later appeared in book form with the title *The Oregon Trail* (1847) and passed through 8 editions. This was followed by *The Conspiracy of Pontiac* (1851) of which 10 editions were issued, and a novel, *Vassall Morton* (1856). In order to obtain facts for a series of historical works, he made several trips to France and travelled extensively in the

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United States and Canada. These works, which form a series under the general name of *France and England in North America*, were entitled *Pioneers of France in the New World* (1865); *The Jesuits in North America in the 17th Century* (1867); *La Salle and the Discovery of the Great West* (1869); *The Old Régime in Canada* (1874); *Count Frontenac and New France under Louis XIV.* (1877); *Montcalm and Wolfe* (2 vols. 1884); *A Half Century of Conflict* (1892). Of these works the five first named have passed through from 10 to 19 editions each. Dr. P. was a member of the London Soc. of Antiquarians, and a corresponding member of the Royal Soc. of Canada.

PARLANCE, n. *pâr'lâns* [Norm. F. *parlance*, speech; F. *parlant*, speaking—from *parler*, to speak]: conversation; idiom of common talk. IN COMMON PARLANCE, in the usual form of speech.

PARLEY, n. *pâr'li* [F. *parler*, to speak—from mid. L. *parab'olârĕ*, to relate, to speak]: conference on some point of mutual concern: in *milit.*, an oral conference with an enemy under a flag of truce, usually at some spot—neutral for the time—between the lines of the two armies: V. to confer with an enemy; to treat or discuss orally. PARLEYING, imp. *pâr'li-ing*. PARLEYED, pp. *pâr'lid*. TO BEAT A PARLEY, to beat a drum or sound a trumpet in a particular way, as a signal that a conference with the enemy is desired. PARLE, v. *pâr'l*, in *OE.*, to discuss a thing orally; to talk: N. conversation; talk; an oral treaty.



## PARLIAMENT.

PARLIAMENT, n. *pâr' tĩ-měnt* [F. *parlement*; Sp. and It. *parlamento*, a conversation, parliament—from It. *parlare*; F. *parler*, to speak: mid. L. *parliamentum*]: in the united kingdom of Great Britain and Ireland, the general and supreme council of the nation (see below): in France, certain high courts of justice in existence before the Revolution. PAR'LIAMENTA'RIAN, n. a. *-tā'rĩ-ăn*, term used during the civil war, denoting adherence to parliament, in opposition to the royalists, who adhered to Charles I.: in modern usage, one versed in parliamentary law. PAR'LIAMENT'ARY, a. *-měnt' ģ-rĩ*, enacted or done by parliament; pertaining to it; according to its rules and usages. PARLIAMENTARY LAW (see PARLIAMENT, below: CONGRESS, UNITED STATES: PROCEDURE, RULES OF LEGISLATIVE AND DELIBERATIVE). PARLIAMENTARY TRAINS, in Britain, certain trains which, by enactment of parliament, are run by railway companies for conveyance of third-class passengers, free of duty, at the rate of a penny (about two cents) per mile. ACT OF PARLIAMENT, statute or law made by the three estates of the realm, which while passing through the houses, and until it has received the assent of the sovereign, is called a *bill*. RUMP PARLIAMENT, in *Eng. hist.* (1648–60), the remanent members of the Long Parliament who voted the trial of Charles I., and passed the memorable act of 1649, May, abolishing the monarchy and the house of lords (see RUMP PARLIAMENT). LONG PARLIAMENT, summoned 1640, Nov., finally expelled by Cromwell 1653, April (see CROMWELL, OLIVER).

PAR'LIAMENT [F. *parlement*—from *parler*, to talk]: supreme legislature of the united kingdom of Great Britain and Ireland. The word was applied, according to Blackstone, first to general assemblies of the states under Louis VII. in France, about the middle of the 12th c.; but in that country it came eventually to be the designation of a body which performed certain administrative functions, but whose principal duties were those of a court of justice.

The origin of the P. of England has been traced to the Saxon great councils of the nation, called 'Witena-gemote,' or meeting of wise men. These had, however, little in common with the parliaments of later date: among other points of difference, they had a right to assemble when they pleased, without royal warrant. Even under the Norman kings, the Great Council formed a judicial and ministerial as well as legislative body, and it was only gradually that the judicial functions were transferred to courts of justice, and the ministerial to the privy council—a remnant of the judicial powers of P. being still preserved in the appellate jurisdiction of the house of lords. Under the Norman kings, the council of the sovereign consisted of the tenants-in-chief of the crown, who held their lands *per baroniam*, lay and ecclesiastic. It was the principle of the feudal system that every tenant should attend the court of his immediate superior; and he who held *per baroniam*, hav•

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ing no superior but the crown, was bound to attend his sovereign in the Great Council or Parliament. In the charter of King John is traced for the first time the germ of a distinction between the peerage and the lesser nobility; the archbishops, bishops, abbots, earls, and greater barons being required to attend by a writ addressed to each, and the other tenants-in-chief by a general summons by the sheriffs and bailiffs. Baronial tenure originally made a man a baron or lord of parliament. When the offices or titles of Earl, Marquis, or Duke were bestowed on a baron, they were conferred by royal writ or patent, and at length barony also came to be conferred by writ instead of by tenure. During the 13th c., the smaller barons were allowed, instead of personally attending the national council, to appear by representatives; but the principle of representation seems to have been reduced to a system first when permission was given to the municipalities also, which, as corporations, were chief tenants of the crown, to appear by representatives. It is not quite clear when the division of P. into two houses took place; but when the representatives of the minor barons were joined by those of the municipalities, the term Commons was applied to both. The lower house was early allowed to deal exclusively with questions of supply; and seems, in the reign of Richard II., to have established the right to assign the supplies to their proper uses. As the commons became more powerful, they came to insist on the crown redressing their grievances before they would vote the supplies. The influence of P. was on the increase during the Tudor period, while the reign of the Stuarts was characterized by a struggle for supremacy between the P. and the crown, each striving to acquire the control of the military force of the country. The powers of the different estates came to be more sharply denied at the revolution of 1688. On the union with Scotland, the P. of England was merged into that of Great Britain. See THREE ESTATES OF THE REALM, under ESTATE.

In its early history, prior to the war of independence, the P. of Scotland had probably not been very unlike that of England; it assembled without warrant, and consisted of bishops, earls, priors, abbots, and barons. At the close of the 13th c., the constitutional history of Scotland diverges from that of England. The addition of the burghs to the national council seems to date from the beginning of the 14th c., but it was not till much later that the lesser barons began to be exempted from attendance. The first act excusing them belongs to the reign of James I. The Scottish P. was never, like the English, divided into two houses; all sat in one hall, and, though it consisted of three estates, a general numerical majority of members was considered sufficient to carry a measure. The greater part of the business was transacted by the Lords of the Articles, a committee named by the P. at the beginning of each session, to consider what

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measures should be passed; and whatever they recommended was generally passed without discussion. It was never held indispensable that the P. should be summoned by the crown, and it has even been thought that the royal assent to the measures carried was not absolutely essential. The P. which carried the Prot. Reformation had no royal sanction. The Union was adjusted by commissioners for each country, selected by the crown, and passed, after strong and protracted opposition, first in Scotland, afterward more easily in England.

By the act of union with Ireland 1800, the Irish P. was united with that of Great Britain, as the P. of the united kingdom of Great Britain and Ireland. The P. of Ireland had been originally formed on the model of that of England, about the close of the 13th c.; but it was merely the very small portion of Ireland occupied by the English settlers that was represented, which, as late as the time of Henry VII., extended scarcely beyond the counties of Dublin, Louth, Kildare, and Meath, and constituted what was called the Pale (q.v.). It was only for the last few years of its existence that the Irish P. was a supreme legislature; the English P. having, till 1783, had power to legislate for Ireland. By one of the provisions of Poyning's Act, passed 1495, no legislative proposals could be made to the Irish P. until they had received the sanction of the king and council in England. An act under George III. gave the Irish P. exclusive authority to legislate for Ireland; and the abuse of this power so obstructed the machinery of government as to render the union of 1800 a necessity.

The power of P. is, according to Sir Edward Coke, so transcendent and absolute that it cannot be confined, either for persons or causes, within any bounds. All remedies which transcend the ordinary courts of law are within its reach. It can alter the succession to the throne, the constitution of the kingdom, and the constitution of P. itself. It has its own law, to be learned from the rolls and records of P., and by precedents and experience. One of the most thoroughly established maxims of this law is, that whatever question arises concerning either house of P. ought to be discussed and adjudged there, and not elsewhere. The house of lords will not allow the commons to interfere in a question regarding an election of a Scotch or Irish peer; the commons will not allow the lords to judge of the validity of the election of a member of their house; nor did either house, previous to 1868, permit courts of law to examine such cases (see *Election Petitions*, below). The authority of P. extends to British colonies and foreign possessions. In the ordinary course of govt., however, P. does not make laws for the colonies. For some, the sovereign in council legislates: others have legislatures of their own, which propound laws for their internal govt., subject to the approbation of the sovereign in council; but these may be repealed and amended by parliament.

The constituent parts of P. are the sovereign, the

## PARLIAMENT.

house of lords, and the house of commons. In the sovereign is vested the whole executive power; the crown is also the fountain of justice, whence the whole judicial authority flows. To the crown is intrusted the permanent duty of government, to be fulfilled in accordance with the law of the realm, and by the advice of ministers responsible to P. The sovereign is invested also with the character of the representation of the majesty of the state. The sovereign's share in the legislature includes the summoning, proroguing, and dissolving of P. Parliament can assemble only by act of the sovereign; in but two instances have the lords and commons met of their own authority—viz., previously to the restoration of Charles II., and at the convention P. summoned at the revolution of 1688; and in both instances it was considered necessary afterward to pass an act declaring the P. a legal one. Though the queen may determine the period for assembling P., her prerogative is restrained within certain limits. She is bound by statute (16 Chas. II. c. 1; and 6<sup>th</sup> and 7 Will. and Mary, c. 2) to issue writs within three years after the determination of a P.; and the practice of voting money for the public service by annual enactments practically renders it compulsory for the sovereign to meet P. every year. The sovereign must assemble P. within 14 days whenever the militia shall be drawn out and embodied in case of apprehended invasion and rebellion, also in case the present militia force should be raised to 120,000 men, and embodied. The royal assent is necessary before any measure can pass into law. The crown, as the executive power, is charged with management of the revenues of the state, and with all payments for the public service; it is therefore the crown that makes known to the commons the pecuniary necessities of the govt., without which no supplies can be granted. The sovereign's prerogative includes also the sending and receiving of ambassadors, entering into treaty with foreign powers, and declaring war or peace. All the kings and queens since the Revolution have taken an oath, at their coronation, 'to govern according to the statutes in parliament agreed on, and the laws and customs of the same.' The sovereign is further bound to an adherence to the Prot. faith, and the maintenance of the Prot. religion as established by law. By the Bill of Rights (1 Will. and Mary, c. 2, s. 6) and the Act of Settlement (12 and 13 Will. III. c. 2, s. 2), a person professing the popish religion, or marrying a papist, is incapable of inheriting the crown, and the people are absolved from their allegiance to such a person. This exclusion is confirmed by the Act of Union with Scotland; and, in addition to the coronation oath, every king or queen is required to take the declaration against the doctrines of the Rom. Cath. Church prescribed by 30 Chas. II. c. 2, either on the throne in the house of lords, in the presence of both houses, at the first meeting of the first P. after the accession, or at the coronation—whichever event shall first happen. The sov-

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oreign is bound by similar sanctions to maintain in Scotland the Prot. religion and Presb. church government.

The province of the houses of P. is to legislate with the crown, to provide supplies, to exercise a supervision over the ministers of the crown and all other functionaries, and to advise the sovereign on matters of public moment. The upper house, from its hereditary and aristocratic character, is a check on the popular branch of the legislature and on hasty legislation.

The house of lords may originate legislative measures of all kinds, except money bills. Acts of grace and bills affecting the rights of peers must originate in this house. In its judicial capacity, defined by the Appellate Jurisdiction Act 1876, it forms a court of final appeal from her majesty's court of appeal in England, from the court of session, Scotland, and the superior courts of law and equity of Ireland. It has a judicature in claims of peerage and offices of honor under reference from the crown. Since the union with Scotland and Ireland, it has had the power of deciding disputed elections of representative peers. It tries offenders impeached by the house of commons, and members of its own body on indictment found by a grand jury. The house of lords is composed of lords spiritual and temporal. According to a declaration of the house 1672, the lords spiritual are lords only of P., and not peers. They consist of 2 abps. and 24 bps. for England, who are said to have seats in virtue of their temporal baronies. By the act of 1869, the Irish Church, which formerly sent 4 bps., is no longer represented. The bp. of Sodor and Man has no seat in P. On Manchester being made a see 1847, it was arranged that one other bp. should have no seat, by a rotation not including the bps. of London, Durham, and Winchester, so as not to increase the number of the lords spiritual. The same rule was applied to the new sees, St. Albans, Truro, Liverpool, Newcastle, and Southwell. The lords temporal consist of: (1) The peers of England, of Great Britain, and of the united kingdom, of whom there were (1886) 6 princes of the royal blood, 21 dukes, 20 marquises, 119 earls, 28 viscounts, and 274 barons. The peers of the united kingdom may be increased without limit, by new creations, at pleasure of the sovereign. (2) 16 representatives chosen from their own body by the peers of Scotland, for each P. As no provision was made at the Union for any subsequent creation of Scottish peers, the peerage of Scotland consists exclusively of the descendants of peers existing before the Union. By order of the house of lords, an authentic list of the Scottish peers was entered on the roll of peers 1708, Feb. 12, to which all claims since established have been added; and in order to prevent the assumption of dormant and extinct peerages by persons not having right to them, a statute provides that no title standing in the roll, in right of which no vote has been given since 1800, shall be called over at an election without an order of the house of lords. (3) 28 representatives of the Irish

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peerage, elected for life. Most peerages are still hereditary. Life peerages were in early times not unknown to the constitution; and, in 1876, peers to sit as members of the house during such time only as they held the office of Lords of Appeal in Ordinary were created by statute. The house has power to call also to its assistance in legal and constitutional questions the judges of the supreme court of judicature of all the four divisions, who advise what should be done. The house has power also to sit for judicial business during the prorogation of P. The votes of spiritual and temporal lords are intermixed, and the joint majority determine every question; but they sit apart, on separate benches—the place assigned to the lords spiritual being the upper part of the house, on the right hand of the throne. A peerage, whether by patent or writ, is forfeited by attainder for high treason; attainder for felony forfeits a peerage by writ, not one by patent. An attainted peerage cannot be restored by the crown, only by act of parliament.

The house of commons, besides its general power to introduce legislative measures, has sole right to originate bills levying taxes, or affecting the public income and expenditure, and to examine into the validity of elections to its own body. The question whether it has any control over the rights of electors was the subject of a memorable contest between the lords and commons 1704, in the cases of Ashby and White, and of the 'Aylesbury men' (*Hatsell's Precedents*, III.), a contest ended by the queen proroguing P. When inquiring into the conflicting claims of candidates for seats in P., the commons have an undoubted power to determine whether electors have the right to vote. The house of commons has the right to expel or commit to prison its own members, and to commit other persons who offend by breach of its privileges, contempt of its authority, disobedience of its orders, or invasion of its rights; but this power is limited to the duration of the session. Expulsion does not, however, create any disability to serve again in P. The house of commons has the power also of impeaching offenders, who, however, are tried at the bar of the house of lords.

The number of members of the house of commons has varied greatly at different times. In the reign of Edward I., it seems to have been 275; in that of Edward III., 250; and of Henry VI., 300. In the reign of Henry VIII., 27 members were added for Wales, and 4 for the county and city of Chester; 4 were added for the county and city of Durham in the reign of Charles II. Between the reign of Henry VIII. and that of Charles II., 180 new members were added by granting of royal charters to boroughs which had not previously returned representatives. 45 members were assigned to Scotland as her proportion at the Union, and 100 to Ireland, making the whole number of members of the house of commons of the united kingdom 658. The Reform Acts of 1832 and later,

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while leaving unaltered the whole number of members of the house of commons, made great changes in the distribution of their seats: 56 boroughs in England and Wales were entirely disfranchised; 30 which had previously returned two members were restricted to one; while 42 new boroughs were created. Four members were assigned to the City of London, 2 to each of the universities of Oxford and Cambridge, and one to 133 cities and boroughs. The number of members for Scotland was increased from 45 to 53. The number for Ireland was increased from 100 to 105, 64 representing counties, 34 cities and boroughs, and 2 the University of Dublin. Further changes in the distribution of seats were made by the Reform Acts of 1867 and 8. The English act deprived of its second member each borough of less than 10,000 inhabitants, and altogether disfranchised seven boroughs; giving 45 seats for redistribution, of which 25 were given to the larger counties, 11 to new boroughs, 8 to boroughs already represented, and 1 to the Univ. of London. The number of 658 seats was thus left unaltered; but the disfranchisement of 9 English boroughs (7 in 1882) and 2 Irish ones reduced the number actually filled. The 652 seats occupied after the election of 1880 were thus distributed:

	Counties	Boroughs.	Universities.	Total.
England and Wales	187	295	5	487
Scotland.....	32	<del>26</del>	2	60
Ireland .....	64	39	2	105
	<hr style="width: 50px; margin: 0 auto;"/>	<hr style="width: 50px; margin: 0 auto;"/>	<hr style="width: 50px; margin: 0 auto;"/>	<hr style="width: 50px; margin: 0 auto;"/>
	283	360	9	652

There has been, since 1832, a system of registration for voters.

The Representation of the People Act 1884, and the Distribution of Seats Act 1885, have effected greater change in the number of electors in the united kingdom and the arrangement of the constituencies than any previous reform bill. The Reform Bill 1832 added less than 300,000 voters to the electorate; the reform of 1867-8 increased the electorate from 1,136,000 to 2,448,000. At the passing of the last Franchise Act, the electorate had by natural growth risen to about 3,000,000; and that act added about 2,000,000 to the list of voters. Of the new electors, about 1,300,000 are in England and Wales, 200,000 in Scotland, and 400,000 in Ireland.

The new Franchise Act had its root in the household suffrage established 1867 and 8. Before the passing of the new act, the borough franchise was of three kinds: the £10 occupation franchise; the household franchise; and the lodger franchise (the lodgings being worth £10 a year unfurnished). These were recognized by the act of 1884, which added to them a fourth, the 'service' franchise—namely, that every man who inhabits a house by virtue of office, service, or employment, if the house is not inhabited by his employer also, is henceforward entitled to vote as a householder (a class including many officers of public establishments, bailiffs, gamekeepers, shepherds, and farm servants). These four franchises

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in boroughs were now extended to the counties also. All persons, either in boroughs or counties, may now claim to be registered as voters in respect of a £10 clear annual value qualification, applying to the occupation of land, with or without buildings; but the vast majority of electors, old and new, will, both in boroughs and in counties, be registered as rated occupiers simply. Under the former acts, those ratepayers who had not paid their poor rates before the 31st of July of any year were thereby disqualified as voters, and their names struck off the roll of voters for the ensuing year. The new act maintains the same disqualification in the case of those householders who are rated individually for the poor's tax; but to those who are registered under the 'service' clauses, or who are otherwise not rated for the poor's tax, the above disqualification does not, of course, apply. The extension of the franchise applies equally to Scotland and Ireland, the only difference being in details. The right of voting is thus placed on a broad and intelligible basis, and is now common in the same degree to all parts of the united kingdom. The old property franchises in the counties, though practically superseded, are left in the main untouched. Some provision is made against 'faggot votes' in the cases of rent-charge and joint ownership.

Before the passing of the Distribution of Seats Act 1885, the proportion of members to population was, on an average, 1 to 54,000. The Seats Act merged in the counties all English towns of less than 15,000 inhabitants, together with certain others that had been guilty of bribery; reduced by one the representation of certain boroughs and counties; allotted one member to boroughs of pop. between 15,000 and 60,000; for towns up to 165,000 allowed two members; and to those above that limit gave from one to six additional members. The act further adds 12 members to the house of commons, increasing the full number from 658 to 670. The 12 new members go to increase the representation of Scotland from 60 to 72; 2 Irish seats are disfranchised, and go to English constituencies; the representation of Wales is unaltered. In all, 120 seats were abolished—81 boroughs in England (15 of these having heretofore 2 members, the rest 1 each), 2 groups of boroughs in Scotland, and 22 Irish boroughs ceasing hereafter to send members to parliament as distinct constituencies. The electors of such boroughs are not, of course, disfranchised, but will now vote in the county district into which the borough has been thrown; and the county districts are in many cases named after these once parliamentary boroughs. Next, 36 English boroughs, 2 English counties (Rutland and Hereford), 3 Irish boroughs, and 1 Irish county lose 1 member each, while the City of London (in the narrowest sense, as distinguished from the metropolis at large) is to send 2 instead of 4 representatives; thus 44 seats became available for redistribution. Collectively, 164 seats were set free. Of



## PARLIAMENT.

these, the greater part were given to existing boroughs and counties. But 6 English boroughs, not metropolitan, were made parliamentary boroughs; while the metropolitan boroughs are increased from 9 to 29 (including Croydon and West Ham, both without the limits of the Metropolitan Board of Works), and have, with the City of London, 62 members in all. Of existing borough constituencies, other 12 large English cities received additional members; as also 3 Scottish and 2 Irish cities. An important feature of the act is that, as a general rule, both counties and boroughs are broken up into one-member electoral districts. Thus, the 26 members for Yorkshire and the 23 for Lancashire sit each for a separate electoral district; and so with the 9 members for Liverpool, the 7 for Birmingham, the 6 for Manchester, the 7 for Glasgow, the 4 for Edinburgh, etc. The City of London and towns between 50,000 and 165,000 inhabitants continue, however, to be represented each by two members conjointly. To suit them to the distribution measure, the boundaries of the new electoral districts have been carefully defined, and those of the old constituencies altered where necessary.

As to membership in P., Scotch peers, though not representative peers, are disqualified from sitting in the house of commons. Irish peers may represent any constituency in Great Britain, but not in Ireland. A disqualification is attached also to judges (except the master of the rolls), to clergymen of the Established Church of England or of Scotland, Rom. Cath. priests, revenue officers, persons convicted of treason and felony, and to aliens, even when naturalized, unless the right have been conceded in express terms. Government contractors are disqualified. A member becoming bankrupt is incapacitated from sitting or voting.

When a new P. has to be assembled, the lord chancellor, by order of the sovereign, directs the clerk of the crown to prepare and issue, under the great seal, writs to the sheriffs of counties, both for the counties and the boroughs; and the sheriff of each county appoints a day for the election in that county. The candidates are nominated by a writing signed by two electors, as proposer and seconder, and eight others, as consenting, and delivered to the returning officer. If, on expiry of an hour from the time fixed, there are more candidates than vacancies, the election is adjourned, and a poll taken. The vote is given by Ballot (q.v.), and the result announced by the returning officer, and returned to the clerk of the crown in chancery. Vacancies occurring after a general election are supplied by new writs issued by authority of the house.

A member of the house of commons cannot, in theory, resign his seat; but, in practice, ways are provided for evasion of this principle. When a member is elected to any office of profit under the crown, his election is declared void. A member wishing to resign usually applies for the stewardship of the Chiltern Hundreds (q.v.).

PARLIAMENT.  
HOUSE OF COMMONS SINCE THE REDISTRIBUTION OF  
1900.

ENGLAND AND WALES.

<i>Counties—</i>	Members.	<i>Welsh Counties—</i>	Members.
Bedford .....	2	Montgomery .....	1
Berks .....	3	Pembroke .....	1
Buckingham .....	3	Rednor .....	1
Cambridge .....	3	Total.....	19
Chester .....	8		
Cornwall .....	6		
Cumberland .....	4		
Derby .....	7		
Devon .....	8		
Dorset .....	4		
Durham .....	9		
Essex .....	8		
Gloucester .....	5		
Hants (without Isle of Wight) .....	5		
Hereford .....	2		
Hertford .....	4		
Huntingdon .....	2		
Kent .....	8		
Lancaster (23)—Northern .....	4		
North-Eastern .....	4		
South-Eastern .....	8		
South-Western .....	7		
Leicester .....	4		
Lincoln .....	7		
Middlesex .....	7		
Monmouth .....	3		
Norfolk .....	6		
Northampton .....	4		
Northumberland .....	4		
Nottingham .....	4		
Oxford .....	3		
Rutland .....	1		
Shropshire .....	4		
Somerset .....	7		
Stafford .....	7		
Suffolk .....	5		
Surrey .....	6		
Sussex .....	6		
Warwick .....	4		
Westmoreland .....	2		
Wilts .....	5		
Worcester .....	5		
York (26)—East Riding .....	3		
North Riding .....	4		
West Riding .....	—		
" Eastern .....	6		
" Northern .....	5		
" Southern .....	8		
Total .....	234		
<i>Welsh Counties—</i>			
Anglesey .....	1		
Brecon .....	1		
Cardigan .....	1		
Carmarthen .....	2		
Carnavon .....	2		
Denbigh .....	2		
Flint .....	1		
Glamorgan .....	5		
Merioneth .....	1		
		<i>Boroughs—</i>	
		Ashton-und-Lyne. Lancashire ..	1
		Aston Manor .....	1
		Barrow-in-Furn's .. Lancashire ..	1
		Bath .....	2
		Bedford .....	1
		Birkenhead .....	1
		Birmingham .....	7
		Blackburn .....	2
		Bolton .....	2
		Boston .....	1
		Bradford .....	3
		Brighton .....	2
		Bristol .....	4
		Burnley .....	1
		Bury .....	1
		Bury St. Edmund's. Suffolk .....	1
		Cambridge .....	1
		Canterbury .....	1
		Carlisle .....	1
		Chatham .....	1
		Cheltenham .....	1
		Chester .....	1
		Christchurch .....	1
		Colchester .....	1
		Coventry .....	1
		Darlington .....	1
		Derby .....	2
		Devonport .....	2
		Dewsbury .....	1
		Dover .....	1
		Dudley .....	1
		Durham .....	1
		Exeter .....	1
		Falmouth and	
		Penryn .....	1
		Gateshead .....	1
		Gloucester .....	1
		Grantham .....	1
		Gravesend .....	1
		Grimsby (Great) .. Lincoln .....	1
		Halifax .....	2
		Hanley .....	1
		Hartlepool .....	1
		Hastings .....	1
		Hereford .....	1
		Huddersfield .....	1
		Hull .....	3
		Hythe .....	1
		Ipswich .....	2
		Kidderminster .....	1
		Leeds .....	5
		Leicester .....	2
		Lincoln .....	1
		Liverpool .....	9

# PARLIAMENT.

1900—(Continued).

## ENGLAND AND WALES—(Continued).

<i>Boroughs—</i>	Members.	<i>Boroughs—</i>	Members.
London and Metropolitan		Salisbury . . . . . Wiltshire . . . . .	1
Boroughs (62)—		Scarborough . . . . . Yorkshire . . . . .	1
City . . . . . Middlesex . . . . .	2	Sheffield . . . . . “ . . . . .	5
Battersea and		Shields (South) . . . . . Durham . . . . .	1
Clapham . . . . . Surrey . . . . .	2	Shrewsbury . . . . . Shropshire . . . . .	1
Bethnal Green . . . . . Middlesex . . . . .	2	Southampton . . . . . Hampshire . . . . .	2
Camberwell . . . . . Surrey . . . . .	3	Stafford . . . . . Staffordshire . . . . .	1
Chelsea . . . . . Middlesex . . . . .	1	Stalybridge . . . . . Lancashire . . . . .	1
Croydon . . . . . Surrey . . . . .	1	Stockport . . . . . Cheshire . . . . .	2
Deptford . . . . . Kent and		Stockton . . . . . Durham . . . . .	1
Surrey . . . . .	1	Stoke-upon-Trent . . . . . Stafford . . . . .	1
Finsbury . . . . . Middlesex . . . . .	3	Sunderland . . . . . Durham . . . . .	2
Fulham . . . . . “ . . . . .	1	Taunton . . . . . Somerset-	
Greenwich . . . . . Kent . . . . .	1	shire . . . . .	1
Hackney . . . . . Middlesex . . . . .	3	Tynemouth and N. Northumber-	
Hammersmith . . . . . “ . . . . .	1	Shields . . . . . land . . . . .	1
Hampstead . . . . . “ . . . . .	1	Wakefield . . . . . Yorkshire . . . . .	1
Islington . . . . . “ . . . . .	4	Walsall . . . . . Staffordshire . . . . .	1
Kensington . . . . . “ . . . . .	2	Warrington . . . . . Lancashire . . . . .	1
Lambeth . . . . . Surrey . . . . .	4	Warwick and Warwick-	
Lewisham . . . . . Kent . . . . .	1	Leamington . . . . . shire . . . . .	1
Marylebone . . . . . Middlesex . . . . .	2	Wednesbury . . . . . Stafford . . . . .	1
Newington . . . . . Surrey . . . . .	2	West Bromwich . . . . . “ . . . . .	1
Paddington . . . . . Middlesex . . . . .	2	Whitehaven . . . . . Cumberland . . . . .	1
St. George, Han-		Wigan . . . . . Lancashire . . . . .	1
over Square . . . . . “ . . . . .	1	Wight, Isle of . . . . . Hampshire . . . . .	1
St. Pancras . . . . . “ . . . . .	4	Winchester . . . . . “ . . . . .	1
Shoreditch . . . . . “ . . . . .	2	Windsor . . . . . Berkshire . . . . .	1
Southwark . . . . . Surrey . . . . .	3	Wolverhampton . . . . . Stafford . . . . .	3
Strand . . . . . Middlesex . . . . .	1	Worcester . . . . . Worcester-	
Tower Hamlets . . . . . “ . . . . .	7	shire . . . . .	1
Wandsworth . . . . . Surrey . . . . .	1	Wormouth, Great Norfolk and	
West Ham . . . . . Essex . . . . .	1	Suffolk . . . . .	1
Westminster . . . . . Middlesex . . . . .	2	York . . . . . Yorkshire . . . . .	2
Woolwich . . . . . Kent . . . . .	1	Total . . . . .	223
Lynn Regis . . . . . Norfolk . . . . .	1		
Maidstone . . . . . Kent . . . . .	1	<i>Welsh Boroughs—</i>	
Manchester . . . . . Lancashire . . . . .	6	Cardiff <i>district</i> . . . . .	1
Middlesbrough . . . . . Yorkshire . . . . .	1	Carmarthen “ . . . . .	1
Monmouth <i>dist.</i> . . . . . Monmouth . . . . .	1	Carnarvon “ . . . . .	1
Morpeth . . . . . Northumber-		Denbigh “ . . . . .	1
land . . . . .	1	Flint “ . . . . .	1
Newcastle-on-		Merthyr-Tydvil . . . . .	2
Tyne . . . . . Northumber-	2	Montgomery <i>district</i> . . . . .	1
Newcastle-		Pembroke “ . . . . .	1
under-Lyme . . . . . Stafford . . . . .	1	Swansea “ . . . . .	1
Northampton . . . . . Northamp’n . . . . .	2	Total . . . . .	11
Norwich . . . . . Norfolk . . . . .	2	<i>Universities—</i>	
Nottingham . . . . . Nottingham . . . . .	3	Cambridge . . . . .	2
Oldham . . . . . Lancashire . . . . .	2	London . . . . .	1
Oxford . . . . . Oxford . . . . .	1	Oxford . . . . .	2
Peterborough . . . . . Northamp’n . . . . .	1	—	5
Plymouth . . . . . Devonshire . . . . .	2	Total for England and Wales . . . . .	495
Pontefract . . . . . Yorkshire . . . . .	1		
Portsmouth . . . . . Hampshire . . . . .	2		
Preston . . . . . Lancashire . . . . .	2		
Reading . . . . . Berkshire . . . . .	1		
Rochdale . . . . . Lancashire . . . . .	1		
Rochester . . . . . Kent . . . . .	1		
St. Helen’s . . . . . Lancashire . . . . .	1		
Salford . . . . . “ . . . . .	3		

PARLIAMENT.

HOUSE OF COMMONS SINCE THE REDISTRIBUTION OF  
1900.—(Continued).

SCOTLAND.

<i>Counties</i> (39 seats)— Members.	<i>Boroughs</i> (31 seats)— Members.
Aberdeen.....2	Aberdeen... ..2
Argyll.....1	Ayr <i>district</i> .....1
Ayrshire.....2	Dumfries “.....1
Banff.....1	Dundee.....2
Berwick.....1	Edinburgh.....4
Bute.....1	Elgin <i>district</i> .....1
Caithness.....1	Falkirk “.....1
Clackmannan and Kinross.....1	Glasgow.....7
Dumbarton.....1	Greenock.....1
Dumfries.....1	Hawick <i>district</i> .....1
Edinburgh.....1	Inverness “.....1
Elgin and Nairn.....1	Kilmarnock “.....1
Fife.....2	Kirkcaldy “.....1
Forfar.....1	Leith “.....1
Haddington.....1	Montrose “.....1
Inverness.....1	Paisley.....1
Kincardine.....1	Perth.....1
Kirkcudbright.....1	St. Andrews <i>district</i> .....1
Lanark.....6	Stirling “.....1
Linlithgow.....1	Wick “.....1
Orkney and Shetland.....1	
Peebles and Selkirk.....1	
Perth.....2	
Renfrew.....2	
Ross and Cromarty.....1	
Roxburgh.....1	
Stirling.....1	
Sutherland.....1	
Wigtown.....1	

<i>Universities</i> —	
Edinburgh, St. Andrews.....1	
Glasgow, Aberdeen. . . . .1	
<hr/>	
Total for Scotland.....72	

IRELAND.

<i>Counties</i> (85 seats)— Members.	<i>Counties</i> — Members.
Antrim.....4	Sligo.....2
Armagh.....3	Tipperary.....4
Carlow.....1	Tyrone.....4
Cavan.....2	Waterford.....2
Clare.....2	Westmeath.....2
Cork.....7	Wexford.....2
Donegal.....4	Wicklow.....2
Down.....4	
Dublin.....2	
Fermanagh.....2	
Galway.....4	
Kerry.....4	
Kildare.....2	
Kilkenny.....2	
King's County.....2	
Leitrim.....2	
Limerick.....2	
Londonderry.....2	
Longford.....2	
Louth.....2	
Mayo.....4	
Meath.....2	
Monaghan.....2	
Queen's County.....2	
Roscommon.....2	

<i>Boroughs</i> (16 seats)— Members.	
Belfast.....4	
Cork.....2	
Dublin.....4	
Galway.....1	
Kilkenny.....1	
Limerick.....1	
Londonderry.....1	
Newry.....1	
Waterford.....1	

<i>University</i> —	
Dublin.....2	
<hr/>	
Total for Ireland.....103	

## PARLIAMENT.

*Privilege.*—Both houses of P. possess extensive privileges for maintenance of their authority and protection of individual members. Some of these privileges have well-defined limits; others are so vague in their extent as occasionally to lead to conflicts between P. and the courts of law. The privilege of speech is claimed of the sovereign by the speaker of the house of commons at the opening of every new parliament. At the same time, any member using offensive expressions may be called to the bar to receive a reprimand from the speaker; or, if the offense be grave, may be committed for contempt, in which case he is sent either to the Tower or to Newgate. Persons not members of the house also may be committed for breach of privilege, and no one committed for contempt can be admitted to bail, nor can the cause of commitment be inquired into by the courts of law. The publication of the debates of either house has repeatedly been declared a breach of privilege; but for a long time this privilege has been practically waived, except where the reports are false and perverted. Publication of the evidence before a select committee previously to its being reported is punished as a breach of privilege. Libellous reflections on the character and proceedings of P., or of members of the house, come under the same category, as also does assaulting or threatening a member. Wilful disobedience to the orders of the house is punishable as a breach of privilege; but if orders be given beyond the jurisdiction of the house, their enforcement may be questioned in a court of law. The offer of a bribe to, or its acceptance by, a member is a breach of privilege; so also is any interference with the officers of the house in the execution of their duty, or tampering with witnesses who are to be examined before the house or a committee of the house. Members of both houses are free from arrest or imprisonment in civil matters—a privilege permanent in the case of peers, extending also to peeresses, whether by creation or marriage (though the latter lose it by subsequently marrying a commoner), and to peers and peeresses of Scotland and Ireland, whether representative or not. It continues in the case of members of the house of commons during the sitting of P., for 40 days after each prorogation, for 40 days prior to the day to which P. is prorogued, and for a reasonable time after a dissolution. Witnesses summoned to attend before P. or parliamentary committees, and other persons in attendance on the business of P., also are protected from arrest. Protection is not claimable from arrest for any indictable offense. Counsel are protected for any statements that they may make professionally.

*Meeting of a New Parliament.*—On the day appointed for meeting of a new P., the members of the two houses assemble in their respective chambers. In the lords, the lord chancellor acquaints the house that ‘his [or her] majesty, not thinking it fit to be personally present here this day, has been pleased to cause a commission to be

## PARLIAMENT.

issued under the great seal, in order to the opening and holding of the parliament.' The lords commissioners, being in their robes, and seated between the throne and woolsack, then command the gentleman usher of the black rod (see BLACK-ROD) to let the commons know that 'the lords commissioners desire their immediate attendance in this house, to hear the commission read.' Meantime, in the lower house, the clerk of the crown in chancery has delivered to the clerk of the house a list of the members returned to serve; and, on receiving the message from Black-rod, the commons go up to the house of lords. The commission having been read in presence of the members of both houses, the lord chancellor opens the parliament by stating that 'his [or her] majesty will, as soon as the members of both houses shall be sworn, declare the causes of his calling this parliament; and it being necessary that a speaker of the house of commons should first be chosen, that you, gentlemen of the house of commons, repair to the place where you are to sit, and there proceed to the appointment of some proper person as your speaker, and that you present such person whom you shall so choose here to-morrow at — o'clock, for his [or her] majesty's royal approbation.' The commons immediately withdraw, and, returning to their own house, proceed to elect a speaker.

Till a speaker be elected, the clerk acts as speaker, standing, and pointing to members as they rise to speak, and then sitting down. If only one candidate be proposed for the office, the motion, after being seconded, is supported by an influential member, generally the leader of the house of commons; and the member proposed, having expressed his sense of the honor meant to be conferred on him, is called by the house to the chair, to which he is led by his proposer and seconder. If another member be proposed and seconded, a debate ensues; and, at its close, the clerk puts the question, that the member first proposed 'do take the chair of the house as speaker.' If the house divide, he directs one party to go into the right lobby, and the other into the left, and appoints two tellers for each—this being the usual mode of taking a vote by division. If the majority be in favor of the member first proposed, he is led to the chair; if not, a similar question being put regarding the other member, and answered in the affirmative, he is conducted to the chair. The speaker-elect expresses his thanks for the honor conferred on him, and takes his seat; on which, the mace is laid on the table, where it is always placed during the sitting of the house with the speaker in the chair. He is then congratulated by some leading member, and the house adjourns. The next day, the speaker-elect, on the arrival of Black-rod, proceeds with the commons to the house of lords, where his election is approved by the lord chancellor. He then lays claim, on behalf of the commons, to their ancient rights and privileges; which being confirmed, he retires

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with the commons from the bar. Nearly the same forms are observed on the election of a new speaker, when a vacancy occurs by death or resignation in the course of the session.

The members of both houses then take the oath prescribed by law: see OATH: ABJURATION. In the upper house, the lord chancellor first takes the oath singly at the table. The clerk of the crown delivers a certificate of the return of the Scottish representative peers, and Garter King-at-Arms (q.v.) the roll of the lords temporal, after which the lords present take and subscribe the oath. Peers newly created by letters patent present their patents to the lord chancellor, are introduced in their robes between two other peers of their own dignity, preceded by Black-rod and Garter, and conducted to their places. Similar ceremony is observed in the case of peers who have received a writ of summons. A bishop is introduced by two other bishops, without the formalities observed with temporal lords. Peers by descent have a right to take their seats without introduction. When the greater part of the members of both houses have been sworn, the causes of calling the P. are declared by the sovereign, either in person or by commission. In the former case, the sovereign proceeds in state to the house of lords, and commands Black-rod to let the commons know that 'it is his [or her] majesty's pleasure that they attend him immediately in this house.' Black-rod proceeds to the house of commons, and formally commands their attendance, on which the speaker and the commons go up to the bar of the house of lords, and the sovereign reads his speech, which is delivered to him by the lord chancellor kneeling on one knee. Of late years, the practice has been revived of the lord chancellor reading the royal speech in the sovereign's presence. When P. is opened by commission, the sovereign not being personally present, the lord chancellor reads the royal speech to both houses. Immediately after the royal speech is read, the house is adjourned during pleasure; but both houses are resumed in the afternoon, for the purpose of voting an address in answer to the speech from the throne. In each house it is common to begin business by reading some bill *pro forma*, in order to assert the right of deliberating without reference to the immediate cause of summons. The royal speech is then read, and an address moved in answer to it. Two members in each house are chosen by the ministry to move and second the address. The preparation of the address is referred to a select committee; it is twice read, may be amended, and, when finally agreed on, it is ordered to be presented to the sovereign.

*Adjournment, Prorogation, and Dissolution.*—Adjournment of P. is but the continuance of the session from one day to another. A prorogation differs from an adjournment in this respect, that it not merely suspends all business, but quashes all proceedings pending at the

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time, except impeachments by the commons, and appeals and writs of error in the lords. It being a rule that a bill of the same substance cannot be introduced twice in the same session, a prorogation has sometimes been resorted to, to enable a second bill to be brought in. P. can be prorogued only by the sovereign.

P. comes to an end by dissolution. This dissolution may be by the will of the sovereign expressed in person or by representatives. Having been first prorogued, it is dissolved by a royal proclamation, and by the same instrument it is declared that the chancellor of Great Britain and chancellor of Ireland have been respectively ordered to issue writs for calling a new parliament. By the Reform Act of 1867, the P. in being at any future demise of the crown shall not be determined by such demise, but shall continue as long as it would otherwise have continued unless dissolved by the crown. Were the power of dissolving the P. not vested in the executive, there would be danger of its becoming permanent, and encroaching on the royal authority, so as to destroy the balance of the constitution. An example of this danger is shown in the Long Parliament (1640, Nov.—1653, Apr.), to which Charles I. conceded that it should not be dissolved till such time as it dissolved itself, and which Oliver Cromwell found it necessary to dissolve and expel by force. If the houses of P. encroach on the executive, or act factiously or injudiciously, the crown may, by a dissolution, bring their proceedings to an end, and appeal to the people by sending the members of the house of commons to give an account of their conduct to their constituents. There was originally no limit to the duration of a P. except the will of the sovereign; but the term has been extended to seven years. The practice of granting the Mutiny Act and the Budget for a year only now makes it necessary that P. should assemble annually.

*Conduct of Business.*—Some points of interest, including variations from ordinary rules of procedure in deliberative bodies, are here noted. Each house is presided over by its speaker. The speaker of the house of commons does not take part in debate, offer his opinion, or vote on ordinary occasions; but, in case of equality, he has a casting-vote: his duty is to decide all questions which relate to order, putting the matter at issue in a substantive form for the decision of the house, if his own decision is not assented to. He explains any doubts that may arise on bills. He determines the precedence of members rising to address the house. He examines witnesses at the bar. At the close of the session, he addresses the sovereign, on presenting the money-bills passed during the session for the royal assent. He nominates the tellers on a division, and makes known the votes to the house. He may commit members to custody during the pleasure of the house—a confinement which terminates with the close of the session. When a vacancy occurs by death, he signs the warrant to the



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clerk of the crown to make out the writ for the election of a new member. He audits the accounts of the receiver of fees, and directs the printing of the votes and proceedings of the house. The lord chancellor, or lord keeper of the great seal, is the speaker of the house of lords; in his absence, the chairman of the committee of ways and means takes the chair. The speaker is not, as in the lower house, charged with maintenance of order, or the decision who is to be heard: these rest with the house itself. Each house has its *Standing Orders*, or regulations, adopted at different periods; relating partly to internal order, partly to certain preliminaries required in the introduction of bills and promulgation of statutes.

The house of lords usually meets at 5 P.M.; the commons at a quarter before 4 P.M., except on Wednesdays and other days specially appointed for morning sittings. In the lords, the chancellor, as speaker, sits on the woolsack. A standing order, never enforced, requires the lords to take place according to precedence. Practically, the bishops sit together on the right hand of the throne; the members of the administration, on the front bench on the right hand of the woolsack, adjoining the bishops, and the peers who usually vote with them occupy the other benches on that side. The peers in opposition are ranged on the opposite side, and those considered politically neutral occupy the cross-benches between the table and the bar. In the house of commons, the front bench on the right hand of the chair is reserved for the ministry, and called the Treasury Bench, the front bench on the opposite side being occupied by the leaders of the opposition. By ancient custom and orders of both houses, rarely enforced, strangers are excluded while the houses are sitting.

Prayers are read before business is begun—in the house of lords by a bishop; in the house of commons by the chaplain. Every member is bound to attend the house—in the lower house, personally; in the upper, personally or by proxy; but in ordinary circumstances this obligation is not enforced. The house of lords may proceed to business when three peers are present, in the commons, 40 members are required to constitute a house for the dispatch of business. The speaker counts the house at four; and if that number be not then present, or if it be noticed, or appear on a division, that fewer than 40 members are present, the house is adjourned. A call of the house is an expedient to secure attendance on important occasions; when it is made, members absent without leave may be ordered to be taken into custody. When matters of great interest are to be debated in the upper house, the lords are 'summoned.'

To make a motion, or, more properly, to *move the house*, is to propose a question; and notices of motions should be given on a previous day. The commons are in the practice of setting apart Mondays, Wednesdays, Thursdays, and Fridays for considering *orders of the day*, or

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matters which the house had already agreed to consider on a particular day, and of reserving Tuesdays for motions. Government orders take precedence of others on all order days except Wednesdays, which are generally reserved for the orders of independent members. A seconder is not required in the house of lords, nor in committee of the whole in either house. The procedure in *moving the previous question* is as follows: The act of the speaker in putting the question is intercepted by a motion, 'that the question be now put.' The mover and seconder of this motion vote against it; and if it be resolved in the negative, the speaker is prevented from putting the main question, which, however, may be brought forward on another day. The 'previous question' is not allowed in committee of the whole. The speaker of the commons, who does not otherwise vote or take part in a debate, has a casting-vote in case of equality. In the house of lords, the speaker is, on the other hand, not disqualified from taking part in a debate; he votes on divisions, but has no casting-vote; and on an equality the 'non-contents' (noes) prevail. In debate, a member of the commons addresses the speaker; a member of the upper house, the lords collectively; in both cases, standing and uncovered. The speaker's *naming* a member to the house is an old-established form of censure.

*New Procedure Rules.*—Incessant obstruction of business in the house of commons, by the concerted and systematic action of the Irish parliamentary party, led, 1882, to the proposal by govt. of a series of new rules for procedure, which were adopted after long debate. Of the 13 resolutions passed, 10 were straightway made into standing orders. Henceforth, when it appears to the speaker or chairman that a subject has been adequately discussed, and that this is the evident sense of the house, he may inform the house to that effect; and a motion 'that the question be now put' shall be carried if supported by more than 200 members (changed 1888 to 100), or if opposed by less than 40 and supported by more than 100. Motions for adjournment may be used for discussion of a definite matter of urgent public importance if 40 members stand up in favor of this course. Provision is made in that case for limiting debate to the subject in hand. Some new arrangements are made for taking divisions, and technical directions are supplied for guidance of speaker or chairman. No opposed motion shall be taken after half-past twelve. Regulations are laid down for suspension of offending members. The speaker or chairman is invested with large discretionary powers for checking attempts to secure delay by abuse of the rules. At the same time, rules were adopted relating to the appointment or working of standing committees or grand committees, as an experimental means of assisting the house to proceed more expeditiously through its work, which had latterly fallen far into arrears. See CLOSURE.

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*Bills.*—The principal business which occupies both houses is the passing of bills. In early times, laws were enacted in the form of petitions from the commons, which were entered on the rolls of parliament, with the king's answers subjoined; and, at the close of the session, these imperfect records were drawn up in the form of a statute, which was entered on the statute rolls. Bills in the form of complete statutes were introduced in the reign of Henry VI. Bills may originate in either house; but the exclusive right of the commons to deal with all legislation regarding taxes or supplies makes it necessary and expedient that by far the greater part of both public and private bills, except such as are purely personal, should originate in the lower house. One description of act alone originates with the crown—an act of grace or pardon. It is read only once in each house, and cannot be amended, but must be accepted in the form in which it is received from the crown, or rejected. Bills that relate to religion, trade, grants of public money, or taxation, are required to be introduced by the house itself, on the report of a committee of the whole house. A bill is read a first, second, and third time; the first time usually by its short title, as entered in the orders of the day and indorsed on the bill. A day is then appointed for considering the question, 'that the bill be read a second time,' allowing a sufficient interval to elapse to let it be printed and circulated. The time of moving the second reading is the usual time for opposing a bill whose general principle is disapproved. At the third reading, the entire measure is reviewed; and no amendments, except what are verbal, can then be made; and the question is put to the house, 'that this bill do now pass.' The bill, when passed by the commons, is sent to the lords, where it goes through the same forms; if rejected, no further notice is taken of it; if passed with amendments, it may become the subject of conference between the two houses; but reasons for disagreement from amendments are now frequently communicated by messages, without a conference. The same forms are gone through when a bill originates in the house of lords. The official record of the assent of one house to the bills passed or amendments made by the other is an indorsement on the bill in Norman French. Thus, when a bill is passed by the commons, the clerk of the house writes on the top of it, 'Soit baillé aux seigneurs.' When the lords make amendment to a bill, it is returned with the indorsement, 'À ceste bille avesque des amendments les seigneurs sont assentus.' When it is sent back with these amendments agreed to, the clerk of the house of commons writes, 'À ces amendments les Communes sont assentus.' When both houses have agreed to a bill, it is deposited in the house of lords, to await the royal assent, unless it be a money-bill, which is sent back to the commons.—In private bills, the functions of P. partake of the judicial as well as

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the legislative character; and the rules are framed to require deliberate examination and consideration of each case. In recent times, the necessity for obtaining private acts has been, in many cases, obviated by general laws adapted to different classes of objects.

*Royal Assent.*—A bill becomes a statute or act of P. on receiving the royal assent, which is given in the house of lords, the commons being also present at the bar. It is given in either of two ways: by letters patent under the great seal, signed by the sovereign's own hand, and communicated to the two houses by commissioners; or by the sovereign present in person in the house of lords. When the royal assent is given by commission, three or more of the lords commissioners command Black-rod to signify to the commons that their attendance is desired, on which the commons, with the speaker, immediately come to the bar. The commission is then read at length; and the titles of all the bills being read by the clerk of the crown, the royal assent to each is signified by the clerk of the parliaments in Norman French, and so entered on the lords' journals. In assenting to a public bill, the words used are: 'Le roy [la reyne] le veult;' to a private bill: 'Soit fait comme il est désiré;' and to a bill of supply (which is presented by the speaker, and receives the royal assent before all other bills): 'Le roy remercie ses bons sujets, accepte leur benevolence, et ainsi le veult.' The refusal of the royal assent is announced by the words, 'Le roy s'avisera.' But the necessity for such refusal is generally removed by the observance of the constitutional principle that the sovereign has no will but that of the ministers, who continue in office only so long as they have the confidence of parliament. The last instance in which the royal assent was refused was by Queen Anne 1707. The royal assent is seldom given in person, except at close of a session, when the sovereign attends to prorogue parliament, and then signifies the royal assent to such bills as have been passed since the last commission was issued; but bills providing for the honor and dignity of the crown, and bills for settling the civil lists, have generally been assented to by the sovereign in person immediately after they have passed both houses. When the royal assent is given in person, the clerk of the crown reads the titles of the bills; and the clerk of the parliaments, who has previously received the sovereign's commands in the robing-room, makes an obeisance to the throne, and signifies the royal assent, as already described, the sovereign giving a gentle inclination.

*Supplies.*—Prior to 1688, in addition to parliamentary taxation, imposts were levied sometimes by an exercise of the royal prerogative. Since the Revolution, no taxes have been raised otherwise than by parliamentary authority. The commons have the exclusive right to impose taxes and vote money for the public service. The lords cannot even make an alteration in a bill of supply,

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except to correct a clerical error. The lords are not even entitled to insert in a bill any pecuniary penalties, or to alter the amount or application of any penalty imposed by the commons—a rule whose rigid assertion has been found to be attended with so much inconvenience that there has latterly been a disposition to relax it. But though the commons have exclusive right to grant supplies, a grant requires the ultimate assent of the sovereign and the house of lords.

The public revenue of the crown is derived in part from permanent charges on the consolidated fund, and in part from actual grants for specific public services, which require the yearly sanction of parliament. The sovereign having demanded from the commons the annual provision for the public service, and directed the estimates to be laid before them, the house in due time resolves itself into a 'committee of supply.' When the first report of the committee of supply has been received and agreed to, a day is appointed for the house to resolve itself into a 'committee of ways and means.' This committee is not appointed till a sum has been voted by the house, nor is it afterward allowed to vote in excess of the expenditure voted by the committee of supply. It is the function of the committee of supply to consider what specific grants are to be voted, and of the committee of ways and means to determine how the funds shall be raised which are voted by the committee of supply. Without special parliamentary authority, the consolidated fund could not be applied to meet the supplies voted for the service of the year; but to make it so available, the committee of ways and means votes general grants from time to time out of the consolidated fund, 'toward making good the supply granted to his [or her] majesty;' and bills are founded on the resolutions of the committee, by which the treasury receives authority to issue the requisite amount from the consolidated fund for the service of the year. When the committee of supply has determined the number of men that shall be maintained during the year for the army and sea service, and its resolutions have been agreed to, the *Mutiny Bill* and *Marine Mutiny Bill* are brought in, providing respectively for the discipline of the troops and marines when on shore. Apart from this annual sanction, the maintenance of a standing army in time of peace would be illegal, and the army and marines would be relieved from all martial discipline. The committee of ways and means receives the annual financial statement, popularly called the *Budget*, from the chancellor of the exchequer. That minister gives a general view of the resources of the country and of the financial policy of the government, and presents a probable estimate of income and expenditure for the twelve months ending Apr. 12 of the following year. He states what taxes he intends to reduce, and what new ones he means to impose, and ends by proposing resolutions for the adoption of the committee, which, when reported to the

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house, form the ground-work of bills for accomplishing the financial objects proposed. The resolutions of the committee of ways and means are carried into effect by the Consolidated Fund Bill, or, as it is often called, the *Appropriation Bill*.

*Communications with the Crown.*—Besides at the opening and proroguing of parliament, and giving of the royal assent, there are other occasions on which the crown communicates with parliament by a *message*, under the sign-manual, to either house singly, or both houses separately. Messages are brought by a member of the house, being a minister of the crown, or one of the royal household, and may relate to important public events, the prerogatives or property of the crown, provision for the royal family, etc. An *address* is the mode in which the resolutions of parliament are communicated to the crown. Addresses may be joint, of both houses, or separate, of either house.

*Election Petitions.*—By the Parliamentary Elections Act, 1868 (31 and 32 Vict. c. 124), election petitions are now presented to the court of common pleas in Westminster or Dublin, or the court of session in Scotland, and tried by a single judge appointed by the court and sitting in the borough or county whose election is contested. An election petition must be signed by some person who voted, or had a right to vote, at the election, or by some person who claims to be returned, or alleges himself to have been a candidate, and presented within 21 days after the return objected to, or, if it proceeds on the allegation of bribery, within 28 days after the alleged payment. Security is to be found for costs to the extent of £1,000, either by sureties not exceeding four, or by a deposit of money, or partly in each way. The judge determines whether the member was duly elected, and certifies to the speaker his determination, which is final. Should the petition allege corrupt practices, the judge shall report also to the speaker whether there has been any corrupt practice within the knowledge and consent of any candidate, the names of persons proved guilty, and whether corrupt practices have prevailed extensively at the election: also, the judge may specially report any matter for consideration of the house of commons. Where, on application of any party to a petition, it appears that the case raised can be conveniently stated as a special case, it may be so stated and determined by the court, who certify their decision to the speaker, which is final. An election petition cannot be withdrawn without leave of the court or judge, on special application; and a person who might have been a petitioner may apply to be substituted for the person withdrawn. The court or judge is to report to the speaker whether, in his opinion, the withdrawal of the petition has been induced by any corrupt arrangement. To these determinations by the judge, the house gives effect by issue of new writs, or otherwise. But the

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house still retains and exercises its jurisdiction in all cases not relegated by statute to the judges.

Under the Corrupt Practices Prevention Act, 1883, offenses are classified as Corrupt Practices and as Illegal Practices. *Corrupt Practices* include: (1) Treating; (2) Undue Influence; (3) Bribery; (4) Personation, or aiding, abetting, counselling, or procuring the same; and (5) Knowingly Making a False Declaration Respecting Election Expenses. 'Treating' is defined as the providing, directly or indirectly, before, during, or after an election, any meat, drink, or other entertainment to or for any person, in order to influence that or any other person either to vote or to refrain from voting at the election. Any elector who corruptly takes such entertainment will be guilty also of a corrupt practice. 'Undue influence' is the direct or indirect use or threatening of force or restraint, or the infliction of injury, in order to induce or compel any person to vote or to refrain from voting, or on account of his having voted or refrained at any election. Treating, undue influence, and bribery are misdemeanors punishable with a year's imprisonment or a fine of £200. Personation is a felony, and is punishable with two years' imprisonment with hard labor. Moreover, persons found guilty of any of these offenses are disqualified for seven years from sitting in P., or voting at any election, or holding any public or judicial office.

Illegal practices include *payment* for the conveyance of voters to or from poll, for exhibiting bills or notices by an elector, for committee-rooms in excess of the number allowed by statute, of money except through election agent, of election expenses after time limited for payment; also voting or inducing a person to vote when disqualified, publishing a false statement of the withdrawal of a candidate, and incurring expenses beyond the maximum allowed by the act. The punishment attached is a fine not exceeding £100, and disqualification for voting at any election in the county or borough for five years. If a candidate is himself guilty, his election will be void, and he shall be incapable of sitting for that constituency for seven years. A list of persons incapacitated from voting, for *corrupt* or *illegal* practices, must be made up annually by every county and borough assessor, specifying names and offenses, and this list must be published with the register of electors.

An election is not to be void where an election court exonerates the candidate personally, but finds his agent guilty of treating, or undue influence, or illegal practice of a trivial character. Further, the election court, if satisfied that an act or omission of a candidate, in itself an illegal practice, payment, or employment, arose from inadvertence and not from bad faith, may order such to be an 'exception' from the provisions of the act, and relieve the person involved from the statutory consequences.

The limits of election expenditure, other than per-

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sonal expenses and returning officers' charges, are stringently fixed at £350 in boroughs and £650 in counties, if the number of electors does not exceed 2,000; the scale rising £30 in a borough and £60 in a county, for every 1,000 electors above 2,000. The maximum of payment for miscellaneous matters must not exceed £200, and must not be incurred in any manner involving an offense.

A candidate must have one election agent only, who must be declared to the returning officer before the nomination day, one subagent for each polling district in counties, and one polling agent in each polling station. In a borough, he may not have more than one clerk and one messenger for every 500 electors; and in a county, for the central committee-room, he may not employ more than one clerk and one messenger for every 5,000 electors. Also for each polling district in counties he may employ one clerk and one messenger for every 500 electors in the district. No one employed in any capacity who is paid for his services may vote.

Every claim respecting election expenses is to be barred and not paid unless sent to the election agent within 14 days after declaration of poll; and all election expenses incurred are to be paid within 28 days after declaration of poll. The return respecting election expenses is, moreover, to be transmitted by the election agent to the returning officer within 35 days after the declaration of the poll, and the returning officer must publish such return of election expenses within 10 days after receiving it, in at least two newspapers circulating in the electing county or borough, together with a notice of time and place where the same may be inspected.

*Impeachment.*—There are instances as far back as the times of the Plantagenet princes of the supreme power of parliament being exercised to punish offenses where something extraordinary in the nature, or some unforeseen obstacle to the execution, of the ordinary laws was deemed to render this advisable. This was done by a bill of attainder, which in the reign of Henry VIII. became the usual mode of proceeding against state offenses. A bill of attainder sometimes followed a regular trial and conviction, as in the case of Empson and Dudley, but was often passed without trial, examination of witnesses, or hearing the accused party, as in the attainder of Fisher and Sir Thomas More. Bills of attainder were sometimes, but rarely, had recourse to under the Stuart kings; the last instance was the case of Sir John Fenwick 1696. The practice of impeachment of extraordinary offenders before the lords by the commons, which had been frequent during the 14th and 15th c., was revived in the reign of James I. This proceeding is not, like bills of attainder or pains and penalties, the making of a new law *pro re nata*, but a carrying out of the already known and established law. The great representative inquest of the nation first find the crime, and then, as prosecutors, support the charge before the high-



## PARLIAMENTARY CHURCH—PARLOUS.

est court of criminal jurisdiction. It has always been allowed that a peer may be impeached for any crime, whether cognizable by the ordinary courts or not. The right of the commons to impeach a commoner of a capital offense, at one time doubted, has been solemnly affirmed by the house of lords. The trial is conducted by managers for the commons. Witnesses are summoned by the lords at the desire of the commons, and Westminster Hall has usually been the place of trial, the lord high steward presiding. The managers make their charges, and adduce evidence; the accused answers, and may defend himself by counsel; and the managers have a right to reply. In giving judgment, the question is put by the lord high steward to each peer, beginning with the junior baron, on each article separately, whether the accused be guilty. The answer is, 'Guilty, on my honor,' or 'Not Guilty, on my honor,' the lord high steward giving his opinion the last; and, the numbers being cast up, the accused is acquainted with the result. Impeachments have not been common in later times, though they are still a competent proceeding; the latest memorable cases are those of Warren Hastings 1788 and Lord Melville 1805.

*Trial of Peers.*—Peers are, in all cases, tried by their peers for treason, misprision of treason, felony, or misprision of felony. For misdemeanors, however, they are tried before the ordinary courts of law; and the lords spiritual are in all cases tried before the ordinary courts of the country. During the sitting of parliament, the trial proceeds before the house of lords, or, more properly, before the court of P., presided over by the lord high steward. When P. is not sitting, the trial takes place before the court of the lord high steward. A peer is liable, on conviction, to the same punishment as any other of the lieges.

See Sir T. Erskine May's *Laws, Privileges, Proceedings, and Usage of Parliament* (new ed. 1879); Lucy's *Parliamentary Procedure* (1880); Walpole's *The Electorate and the Legislature* (1881).—See CONGRESS, UNITED STATES.

PARLIAMEN'TARY CHURCH: in England, a church erected under authority of an act of parliament; generally called a district church. Acts of parliament authorizing such churches are known as the Church Building Acts: see PARISH. In Scotland, similar churches are called *Quoad Sacra* churches.

PARLINE, n. *pâr'lin* [Eng. *par* and *line*]: the mean or normal line of a barometer for a given station.

PARLOR, n. *pâr'lér* [OF. *parleor*; F. *parloir*, the room in a nunnery where the nuns were allowed to speak to visitors through a grating—from F. *parler*; It. *parlatorio*—from It. *parlare*, to speak]: an apartment in a house used as a sitting-room or for common receptions. PARLOR BOARDER, a scholar in a boarding-school who takes meals with the master's family.

PARLOUS, a. *pâr'lüs*: OE. for PERILOUS; also acute, shrewd.

## PARMA.

**PARMA**, *pâr'mâ*: province, formerly a sovereign duchy of Italy, between the Apennines and the Po, touching Sardinia (Piedmont) on the w. and Modena on the e. It comprised, at its annexation to the kingdom of Italy, the two duchies of Parma and Piacenza (2,270 sq. m.; pop. 490,000). The form of government was monarchical, and administrative power was in the hands of a council of state. The revenue was about \$2,250,000. The Apennines, which cross the s. division of the duchies, send off spurs northward; the n. is an undulating plain, sloping to the Po. The highest peaks in P. rise about 7,000 ft. The mountain range is richly clad with oak and chestnut forests. The plain is very fertile, producing rich crops of grain (including rice), leguminous plants, fruits of all kinds, olives, and grapes: marble, alabaster, salt, and petroleum are chief mineral products. Agriculture, silk-working, cattle-breeding, and cheese-making are principal employments. Silk and cheese are chief exports. The cheese, however, known as Parmesan, is made, not in P., but near Lodi (q. v.).

*History.*—P. and Piacenza belonged in the time of the Roman empire to Cisalpine Gaul, and after its fall came under the rule of the Lombards, to whose rule succeeded that of the kings of Italy and the German emperors. In the 12th and following centuries, they joined the other territories of n. Italy, which were struggling for independence, and consequently became involved in the Guelf and Ghibelline contests. Weakened by these strifes, they fell under the domination of the powerful houses of Este, Visconti, and Sforza; but 1499 they passed under the yoke of the French monarch, Louis XII., from whom they were soon recovered by Emperor Maximilian, and handed over to Pope Leo X. 1513. They continued under the sovereignty of the popes till 1543, when they were alienated by Pope Paul III., and with the surrounding territory were erected into a duchy for his natural son Pietro Luigi Farnese, grandfather of Alessandro Farnese, celebrated regent of the Low Countries. On the extinction of the male line of Farnese, 1731, by the death of the eighth duke, Antonio, his niece Elizabeth, queen of Philip V. of Spain, obtained the duchies for her son Don Carlos, who, however, exchanged them 1735, with Austria, for the throne of the Two Sicilies. In 1748 they were restored with Guastalla to Spain, and became a duchy for the Infante Don Philip, with a reversion to Austria in case of failure of his male descendants, or of any of them ascending the Spanish or Neapolitan throne. Philip was succeeded 1765 by his son Ferdinand, an able and enlightened ruler, who expelled the Jesuits 1768. He died 1802, and his dominions were immediately taken by the French, and were incorporated with France as the dept. of Taro 1805. In 1814, by the treaty of Paris, P., Piacenza, and Guastalla were presented as a sovereign duchy to the ex-empress Maria Louisa—a proceeding strongly opposed by the king of

## PARMA.

Spain, who demanded them for his sister Maria Louisa, widow of Louis, King of Etruria, son of Duke Ferdinand. However, 1817, it was settled that Maria Louisa of Austria should possess the duchies, and that on her death they should descend to the rightful heir, Ferdinand Charles, Duke of Lucca, son of Maria Louisa of Spain; and on failure of his heirs, P. should revert to Austria, and Piacenza to Sardinia. On her death, 1847, the Duke of Lucca succeeded as Charles II., and certain exchanges of territory, previously settled by the great powers, took place with Tuscany and Modena—the chief being the transfer of Guastalla to Modena, resulting in a gain to P. of 100 sq. m. of territory. The duke's rule was tyrannical, and on an address being presented to him with a view of obtaining a reform of certain abuses, and a more liberal political constitution, similar to what Tuscany had obtained 1848, Feb., from its grand duke, he threw himself into the arms of Austria, and consented to the occupation of his territory by Austrian troops. 1848, Mar., a revolution broke out, and the duke was compelled to grant the popular demands; but he almost immediately retired from the country. P. joined with Sardinia in the war of 1848–9 against Austria, but on the triumph of Austria was compelled to receive Charles III. (his father, Charles II., having resigned his throne 1849, Mar.) as its ruler. The new duke recalled the constitution which his father had been compelled to grant, and punished with great severity the active agents of the revolutionary movements in his dominions. After Charles III.'s assassination 1854, Mar., his widow, Louise-Marie-Thérèse de Bourbon, daughter of the last Duke of Berry (q.v.), assumed the government for behoof of her son Robert I., and made some attempts at political reform; but the excited state of the people prevented their effectiveness, and she and her son were compelled to leave the country 1859, on the outbreak of a new war between Sardinia and Austria. 1860, Mar. 18, the country was annexed to Sardinia, and now forms a part of the 'compartimento' Emilia, in the kingdom of Italy, comprising the two provinces of Parma (1,270 sq. m.; pop. [1891] 271,621) and Piacenza (910 sq. m.; pop. 228,827); a few of the outlying districts being incorporated with other provinces; (1901) 294,159.

PAR'MÁ: chief town of the province of P., n. Italy; a fine city, formerly cap. of the duchy of P.; on both sides of the river P.; 12 m. s. from the Po, 75 m. s.e. from Milan, and about 75 m. e.n.e. from Genoa. An indecisive engagement took place here 1734, June 29, between the confederated armies of England, France, and Spain, and the Austrians; and 1799, June 19, the French under Macdonald were routed by the Russians under Suwaroff, with a loss of 10,000 men and 4 generals.

The town is of circular form, and surrounded by walls and ditches flanked by bastions; the streets are straight and wide, and meet at right angles, the chief of them, a part of the Roman Via Æmilia, crossing the city from

## PARMA—PARMENIDES.

e. to w., and dividing it into two nearly equal parts. **P.** is notable for its churches, 10 in number, the principal being the *Duomo*, or Cathedral (consecrated 1106), built chiefly in the Lombard style, having the interior adorned with magnificent frescoes by Correggio and paintings by other artists, and surmounted by a beautiful dome; the *Battisterio*, or Baptistery, one of the most splendid in Italy, begun 1196, completed 1281; the church of the *Madonna della Steccata*, containing the famous painting of *Moses Breaking the Tables of the Law*, by Parmigiano. Other celebrated buildings are: the Farnese Palace, gloomy and ill-constructed; and the Farnese Theatre, built (1618–28) of wood, now dilapidated. P. has a library of 120,000 vols., mostly well selected, many rare and valuable; museum of antiquities; botanic garden; theatre (*Teatro Nuovo*); acad. of fine arts, founded 1752, possessing a collection of 600 pictures, many exceedingly valuable. The pictures most esteemed are the *Madonnas* of Correggio and Francia, the *St. Jerome* of Correggio, and the *Jesus Glorified* of Raphael.

The manufactures of P. are stockings, porcelain, sugar, wax candles, and vessels of crystal, also silk, cotton, and fustian stuffs. Chief exports are cheese ('Parmesan') and silk goods; and in June there is an annual silk-fair.—Pop. (1881) 45,217; (1901) 49,340.

PAR'MA, DUKE OF: see FARNESE, PIETRO LUIGI; and successors.

PARMACITY, n. *pâr-mă-sî't'î*: OE. for SPERMACEI, which see.

PARMELIA, *pâr-mē'li-â*: genus of lichens, with leafy horizontal thallus, lobed and cut, and orbicular shields (*apothecia*) fixed by a central point, concave and bordered by the inflexed thallus. The species are numerous; some of them are occasionally employed in dyeing. Various chemical principles have been discovered in lichens of this genus, as *Usnine*, or *Usnic Acid* (found also in species of the genus *Usnea*), and *Parietin*. Valuable medicinal properties—tonic and febrifugal—have been ascribed to *P. parietina*, the Common Yellow Wall Lichen or Common Yellow Wall Moss of the herb-shops, a bright yellow species with deep orange shields, plentiful on walls and trees in most parts of Europe.

PARMENIDES, *pâr-mên'î-dēz*, OF E'LEA: Greek philosopher in lower Italy, and in the opinion of the ancients the greatest member of the Eleatic school: b. prob. about B.C. 539 (though authorities differ); certainly a contemporary of Heraclitus. Nothing is known with certainty regarding his life, but he is said to have visited Athens in his old age, and to have conversed with Socrates, then quite a youth. The story, though it rests on the authority of Plato, has a suspicious air, and seems intended to account for the influence which the philosophy of P. undoubtedly exercised on that of Socrates and Plato themselves. P., like Xenophanes of Colophon, sometimes regarded as the first of the Eleatics, expounded his phi-

## PARMESAN—PARMIGIANO.

osophy in verse—his only work being a didactic poem, *On Nature*. The leading design of this poem is to demonstrate the reality of Absolute Being, the non-existence of which P. declares to be inconceivable, but the nature of which, on the other hand, he admits to be equally inconceivable, inasmuch as it is dissociated from every limitation under which man thinks. P. is not a theologian in speculation, seeking rather to identify his 'Absolute Being' with 'Thought' than with a 'Deity.' He presents a theory of the unity of nature, combined with a theory of its seeming plurality—i.e., of the variety and change of things. He founds his philosophy on the distinction between 'the Ent,' which is whole, indivisible, universal, continuous, unchangeable, perfect, the existent Unity; and 'the Non-ent,' to which pertain all plurality, variation, and change. The Ent, being the only reality, is the only object of knowledge; the Non-ent can be the object only of opinion. P.'s influence over subsequent thinkers is traceable, though various—owing, perhaps, to obscurity in his thought and expressions. Only fragments of his poem remain, separately edited by Fülleborn (Züllichau 1795); another collection is that by Brandis, in his *Commentationes Eleaticæ* (Altona 1815); but the best is in Karsten's *Philosophorum Græcorum veterum Reliquiæ* (Amstelod. 1835).

PARMESAN, a. *pâr'mě-zăn'*: of or from *Parma*, in Italy; applied to a particular kind of cheese.

PARMIGIANO, *pâr-me-jâ'no*, GIROLAMO FRANCESCO MARIA MAZZOLA; called Francesco or Il Parmigiano or Parmigianino: 1504, Jan 11—1540, Aug. 24; b. Parma, Italy: famous painter of the Lombard school, and the most distinguished of those who, without servile imitation, followed the style of Correggio. His pictures attracted much attention when he was little more than 14 years of age. In 1523 he went to Rome to follow his studies, and was soon favorably noticed and employed by Clement VII. He was in that city when it was stormed by the imperialists under Bourbon 1527; and, it is said, was calmly at work on his great picture of *The Vision of St. Jerome* (now in the National Gallery, London) when soldiers, bent on pillage, burst into his studio: he was, however, protected by their leader. After this, he left Rome for Bologna, where he painted various important works, and returned to Parma 1531. Having engaged to execute several extensive frescoes in the church of S. Maria Steccata, after repeated delays he was thrown into prison for breach of contract, and at his release, instead of carrying out his undertaking, he fled to Casal-Maggiore, in the territory of Cremona, where he died soon afterward. Vasari, in his notice of P., attributes his later misfortunes and premature death to his passion for alchemy; but this oft-repeated story has been disproved by the researches of late biographers. He executed several etchings, and some wood-cuts are attributed to him. He had great personal beauty and a fascinating manner, and in his art a singular brilliancy.

## PARNAHIBA—PARNASSUS.

PARNAHIBA, *pâr-nâ-ê' bâ*, or PARANAHYBA, *pâ-râ-nâ-ê' bâ*: river of Brazil, rising in the Sierra dos Coroados, between the provinces of Goyas and Piauí, about 11° s. It flows n.e. and n., and enters the Atlantic in long. about 41° 40' w. by five mouths, which inclose a delta about 30 m. wide along the coast. These mouths, however, are only two to four fathoms deep. It drains the province of Piauí, and forms the boundary between it and the province of Maranhão. Total length estimated 750 m.—Another river P. is a chief tributary of the Parana.

PARNASSIA, *pâr-nās'î-â* [L. *Parnassia*, Parnassian]: genus of plants, ord. *Saxifragaceæ*. There are 14 species, all elegant plants—hence the name, as worthy to grow on Mt. Parnassus. They are annuals, with broad leaves mostly clustered at the base of the slender stem, which bears a single yellowish or white flower. The plants are commonly called 'grass of Parnassus.' *P. palustris* is found both in Europe and in N. America n. of the great lakes. *P. Caroliniana* grows in the n. and s. states.

PARNASSIAN, a. *pâr-nās'sî-ăn*: pert. to Parnassus, in Greece, the mountain sacred to Apollo and the Muses; of the genus *Parnassius*; of the sub-family *Parnassiinæ*.

PARNASSIINÆ, *pâr-nās'î-î'nē* [NL. *Parnassius* (q.v.) and *-inæ*]: sub-family of butterflies, the typical genus of which is *Parnassius*. The P. are confined to the n. hemisphere, and are found mostly on mountains—hence the name.

PARNASSIUS, *pâr-nās'î-ūs* [L.—from *Parnassus*]: genus of butterflies, usually white, sometimes tinted with yellow, and bearing crimson and black ocelli. Of the species (all distinguished by a name or epithet of Apollo), *P. apollo* inhabits Alpine regions of Europe; *P. phæbus* is peculiar to the Alps proper; *P. smintheus* is found in the Rocky Mountains.

PARNASSUS, *pâr-nās'ūs*, modern LIAKHURA, *lê-â-çhō' râ*: mountain in Phocis, greatly celebrated among the ancients, and regarded by the Greeks as the central point of their country. It has three steep peaks, almost always covered with snow, and seen from a great distance, the highest being fully 8,000 ft. above sea-level; but as only two of them are visible from Delphi, it was customary among the Greeks to speak of the two-peaked Parnassus. On its s. slope lay Delphi (q.v.), seat of the famous oracle, and the fountain of Castalia (q.v.). The highest peak was the scene of the orgies of the worship of Dionysus (Bacchus); all the rest of the mountain was sacred to Apollo and the Muses, whence poets were said to 'climb Parnassus,' a phrase still thus employed.

## PARNELL.

PARNELL, *pâr'nél*, CHARLES STEWART, M.P.: Irish agitator: 1846, June 28—1891, Oct. 6; b Avondale, co. Wicklow, Ireland; grandson of Admiral Charles Stewart, U. S. N. He spent two years at the Univ of Cambridge, England; travelled in the United States; and then settled at his birthplace. He was appointed high sheriff of the county 1874, and elected member of parliament by the Home Rule party (see HOME RULE, in Ireland) 1875. In connection with Mr. Biggar, he inaugurated an obstructive policy in parliament, with a view to compelling action on important Irish questions. He introduced 1877, Feb., the Irish Church Act Amendment Bill, to enable the tenants of the disestablished Irish Church to purchase their holdings; but it was rejected by a vote of 150 to 110. He succeeded, after a long and bitter struggle, in securing better treatment of political prisoners, and abolition of flogging in the army. In 1878 P. succeeded Mr. Butt as pres. of the Home Rule Confederation; and on the formation 1879, Oct. 21, of the Irish National Land League, by Michael Davitt (see DAVITT, MICHAEL) and others, he was elected its president. The objects of the league were: to reduce the rack rents and to enable the occupiers to become possessors of the soil. The following Dec. he presented the cause of the league in several large American cities, and raised large sums of money with which to relieve the existing destitution caused by poor crops, and to carry on the work of the organization. The dissolution of parliament caused his return to Ireland as a candidate for re-election. He was chosen by Cork city, Mayo, and Meath, and chose to represent Cork. A land bill introduced by Gladstone (see GLADSTONE, WILLIAM EWART) was only partially satisfactory to the league. With others of the Irish agitators, P. was arrested and confined in Kilmainham jail. The league was declared an illegal organization, but offset this action by issuing a 'No Rent' proclamation. P. was released 1882, May. What had been won of public sympathy and political power thus far by the league was lost to the Irish cause by the assassination of govt. officers in Dublin. Various measures, including the Crimes Act, were adopted in parliament to check disturbance in Ireland and prevent obstruction of business in parliament. The Home Rule party demanded, but failed to secure, a separate parliament for Ireland. A land bill, designed to afford relief, was introduced 1887, and was promptly rejected. The *Times* published the fac-simile of a letter, said to have been written by P., in which regret was expressed for the murder of Lord Cavendish, but that of Mr. Burke was palliated. P. immediately declared the letter a forgery, and called for an investigation by the house, which was refused. A pamphlet entitled *Parnellism and Crime*, in which P. and his associates were accused of instigating numerous crimes and outrages, was issued by the *Times*. An unsuccessful suit for libel was brought by F. H. O'Donnell, but this was believed to be collusive.

## PARNELL.

At this trial, incriminating letters from P. and others were presented, but were repudiated by them and their friends as forgeries. P. again demanded a parliamentary investigation; and, though the specific request was denied, a special commission of three judges was appointed to investigate all charges against P. and his party. The commission spent 128 days on the case, examined 500 witnesses, began its investigations 1888, Oct. 22, closed them 1889, Nov. 22, and made public its report 1890, Feb. 13. On all the direct charges, P. and his associates were exonerated; but they were found guilty of combining to 'boycott' the opponents of the league. The case against the *Times* was pressed, and the letters which had been published as coming from P. were proved to have been written by Richard Pigott, a notorious blackmailer, who admitted the crime, fled the country, and committed suicide in Spain 1889, Mar. 1, leaving in writing a full confession of his guilt. The *Times* published an acknowledgment that the letters were forged, apologized for printing them, and compromised the libel suit by a payment to P. of £5,000 damages. The effect of the *Times* attack, as a whole, was to increase the number of P.'s sympathizers in England and America.—P., in all his earlier leadership of his people, showed a glowing but moderated zeal, tenacious, sagacious, calm in manner, but unflinching in his main demands, and quick to take advantage of the mistakes into which his political opponents were from time to time betrayed by the unfortunateness of their position and of the measures which that position seemed to require.—It remains to be said that in a suit for divorce brought by Capt. W. H. O'Shea against his wife, in which P. was named as co-respondent, the jury found a verdict for the plaintiff, and the court granted the decree 1890, Nov. 17, neither the defendant nor co-respondent interposing a defense. The disclosure created a general and painful surprise, and wide discussion as to the expediency of P.'s continued leadership of the party. Gladstone demanded his retirement from the leadership of the Irish parliamentary party, and as P. would not resign, a majority of the party chose Justin McCarthy as their leader. After the divorce proceedings, P. was quietly married to Mrs. O'Shea.



PARNELL—PARODY.

PAR'NELL, THOMAS, D.D.: poet: 1679-1718, July; b. Dublin. He studied at Trinity College in Dublin, was ordained in the Established Church 1700, was made archdeacon of Clogher 1705, became prebendary of Dublin 1713 and vicar of Finglass 1716. He had inherited a fortune, but left the care of his estate and of his church to others, and spent a large part of his time in London. He became intimate with Swift, Pope, and other literary people; was a member of the Scriblerus Club, mingled in politics, and became famous as an occasional preacher, though giving most of his attention to literary and social pursuits. With the change of govt., he seems to have deserted the tories and joined the whigs, but retained the friends that he had previously made. The *Life of Homer* which appeared with the translation of the *Iliad* by Pope was written by P., and he made an effective rejoinder to various unfavorable criticisms of the manner in which the translation had been done. A vol. of his *Poems* was published by Pope 1722, and passed through several editions. Another vol., largely of religious poems, appeared 1758. Some doubt was thrown on the authenticity of the latter work, but able critics believe it was genuine. His *Life*, written by Goldsmith, was bound with some editions of the *Poems* above noted. He died at Chester.

PARNELLITE, n. *pâr'nél-īt*: a supporter of the Irish policy of Charles Stewart Parnell.

PAROCHIAL, a. *pă-rō'kī-āl* [mid. L. *parochiālis*—from *parōchiā*, the diocese of a bishop, a parish (see PARISH)]: of or pert. to a parish. PARO'CHIALLY, ad. *-lī*. PARO'CHIALIZE, v. *-īz*, to form into parishes. PARO'CHIALIZING, imp. PARO'CHIALIZED, pp. *-īzd*. PARO'CHIAL BOARD, in Scotland, board in each parish which manages the relief of the poor. PAROCHIAL RELIEF, relief of paupers by the parish authorities: see POOR, THE.

PARODY, n. *păr'ō-dī* [F. *parodie*—from Gr. *parōdīā*, a parody—from *para*, beside; *ōdē*, a poem or song: It. *parodia*]: a poetical pleasantry in which verses of a grave and serious nature on one subject are altered and applied to another by way of burlesque: V. to alter, as verses or words, and apply them to a subject different from that of the original. PAR'ODYING, imp. PAR'ODIED, pp. *-dīd*. PAR'ODIST, n. *-dīst*, one who writes a parody. PARODIC, a. *pă-rōd'īk*, or PARODICAL, a. *-ī-kāl*, consisting of or resembling parody.—*Parody* is a burlesque imitation of a serious poem. Its peculiarity is that it preserves the form, and, as far as possible, the words, of the original, and thereby differs from a Travesty, which is a looser and less literal burlesque. The invention of the P. is ascribed usually to the Greeks (from whom we have derived the name), the first parodist, according to Aristotle, being Hegemon of Thasos, who lived during the Peloponnesian war; according to others, Hipponax. From fragments extant of ancient P., we infer that Homer was the favorite subject of comic

## PAROLE.

imitation. Thus Hipponax, in his picture of a glutton, ludicrously insinuates a comparison between the feats of his hero in eating and those of Achilles in fighting, by commencing as follows :

Sing, O celestial goddess. Eurymedon, foremost of gluttons,  
Whose stomach devours like Charybdis, eater unmatched among  
mortals.

The *Batrachomyomachia* (Battle of the Frogs and Mice), erroneously ascribed to Homer, is also a happy and harmless specimen of the P., which, however, soon began to exchange its jocose and inoffensive raillery for a biting and sarcastic banter, of which numerous specimens are seen in the comedies of Aristophanes ; while the philosopher Timon of Phlius invented, under the name *Silla*, a new species of satirical P. Among the Romans, this form of literature is met first in the period of the decline. All the power of Nero could not prevent his verses from being parodied by Persius. Among modern nations, the French, naturally, have been most addicted to this literary mimicry. Corneille parodied Chapelain in his *Cid*, and Racine parodied Corneille. The *potpourris* of Désaugiers are considered by his countrymen models of this ungracious kind of literature. Schiller's famous poem of the *Bell* has been often parodied by German wits. In England, perhaps the best compositions of this nature are the *Rejected Addresses* of the brothers James and Horace Smith : notable in particular is the P. on Scott's ' Battle of Flodden ' in *Marmion*, ending—

'od rot 'em  
Were the last words of Higginbotham.

Barham's *Ingoldsby Legends* contains a P. on Wolfe's *Lines on the Burial of Sir John Moore* : the first stanza is a specimen :

Not a sou had he got, not a guinea or note,  
And he looked most confoundedly flurried  
As he bolted away without paying his shot,  
And his landlady after him hurried.

The *Verses* and *Translations* and the *Fly-Leaves* of C. S. Calverley contain clever parodies of the style of our modern poets. Thackeray's *Miscellanies* and Bret Harte's *Condensed Novels* also contain some very clever and satirical prose parodies on certain of their brother novelists.—See Moser in Daub's and Creuzer's *Studien* ; also Moser's *Parodiarum Exempla*.

PAROLE (formerly PAROL), n. *pär-ōl'* [F. *parole*, word—from mid. L. *parab'ōla*, a recital : F. *parler*, to speak] : words or oral declarations in law : ADJ. given by word of mouth ; not written.—*Parole* is a declaration made on honor by an officer, in a case in which there is no more than his sense of honor to restrain him from breaking his word. Thus a prisoner of war may be released from actual prison on his parole that he will not go beyond certain designated limits ; or he may even be allowed to return to his own country on his parole not to fight again, during the existing war, against

## PAROMOLOGY—PAROS.

his captors. To break *parole* is accounted infamous in all civilized nations; and an officer who has so far forgotten his position as a gentleman ceases to have any claim to the treatment of an honorable man, nor can he expect quarter should he again fall into the hands of the enemy that he has deceived. P., in *milit.*, denotes also a daily password in camp or garrison. PAROLE EVIDENCE, direct evidence from the witness's own mouth, at a trial or hearing of a cause. PAROLE AGREEMENT, in *law*, any agreement made either by word of mouth or by writing not under seal. If the agreement is made by writing under seal, it is called a deed, or indenture, or covenant, according to the nature of its contents. (The older form, *Parol*, is still often used in the legal applications.)

PAROMOLOGY, n. *pär-o-möl'o-jĩ* [Gr. *paromologia*—from *paromologeō*, I grant—*para*, beside, beyond; *homologeō*, I grant]: in *rhet.*, a figure by which a speaker concedes something to his adversary in order to strengthen his own position.

PARONOMASIA, n. *pär'ō-nō-mā'zhĩ-ă* [Gr. *paronomasiā*, a play upon words—from *para*, beside, alongside; *onōma*, a name]: a play upon words, in which the same words in different senses, or words similar or like in sound, but different in signification, are put in opposition; a pun; the assonance of words in different parts of a sentence. PARONOMASTIC, a. *pär'ō-nō-mās'tik*, consisting in a play upon words.

PARONYCHIA, n. *pär'ō-nĩk'ĩ-ă* [Gr. *paronuchĩā*, a whitlow—from *para*, beside; *onux*, the nail]: a whitlow or felon.

PARONYM, n. *pär'ō-nĩm* [Gr. *para*, beside; *onōma*, a name]: a word resembling another in signification. PARONYMOUS, a. *pä-rōn'ĩ-mūs*, of like derivation; kindred; allied. PARON'OMY, n. *-ō-mĩ*, the quality of being paronymous.

PAROPAMISAN' MOUNTAINS: see AFGHANISTAN.

PAROQUET, n. *pär'ō-kět* [see PARROT]: a small species of parrot—also written PAROKET, PARAQUET, and PARRAKEET, etc.: see PARRAKEET.

PAROS, *pā'rōs*: one of the larger islands of the Grecian Archipelago, w. of Naxos, from which it is separated by a channel four to six m. wide; greatest length 15 m.; greatest breadth 9 m.; about 95 sq. m. Pop. 6,000. The surface is hilly, the scenery picturesque, and the soil naturally fertile, though imperfectly cultivated. The island is productive especially in cotton, wax, honey, partridges, and wild pigeons. Near the middle of the island, the mountain Capresso (anc. *Marpessa*) abounds in the famous Parian marble, used by many of the greatest sculptors of antiquity. Parekhia, on the w. coast, is the principal town, and Naussa, on the n. coast, the chief port.

In ancient times, P., said to have been colonized by

## PAROTID—PARR.

Cretans, attained great maritime prosperity, and became wealthy and powerful. It submitted to the Persians, and after the battle of Marathon was assailed ineffectually by Miltiades, who received here the wound of which he died. After the defeat of Xerxes, P. came under the supremacy of Athens, and shared the fate of the other Cyclades. Archilochus, inventor of iambic verse, was born here.

PAROTID, a. *pă-rôt'id* [F. *parotidè*—from Gr. *parōtis* or *parōtīda*, a tumor under the ears—from *para*, beside; *ous*, the ear]: pert. to certain glands. PAROTIS, n. *pă-rō'tīs*, or PAROT'ID, plu. PAROTIDES, *pă-rôt'ī-dēz*, the salivary glands situated below and before each ear, near the articulation of the lower jaw (see SALIVARY GLANDS). PAROTITIS, n. *păr'ō-tī'tīs*, inflammation of the parotid glands; the mumps.

PAROUSIA, *pâ-row'zhî-â* [Gr. presence]: term in theol. denoting the presence of the coming One, i.e., of the Christ; thence his arrival, manifestation, advent. It is applied sometimes to advent or coming in general (II Cor. vii. 6, 7), and so to Christ's nativity; but specifically and usually denotes the visible, glorious, and consummating advent of the Lord Jesus Christ at the end of the world.

PAROXYSM, n. *păr'ōks-izm* [F. *paroxysme*, a fit of ague, a paroxysm—from Gr. *paroxus'mos*, excitement, exasperation—from *para*, beside; *ox'unein*, to sharpen—from *oxus*, sharp]: a fit of rage or passion; a recurring increase and exacerbation of a disease; in *geol.*, any sudden and violent effort of natural agency, such as the explosive eruptions of a volcano, or the convulsive throes of an earthquake. PAR'OXYS'MAL, a. *-iz'māl*, pert. to or occurring in paroxysms. PAR'OXYS'MIST, n. *-iz'mīst*, in *geol.*, one who believes in the violent operations of nature, rather than in ordinary and continued ones.

PARQUETRY, n. *pâr'kēt-rî* [F. *parquet*, an inlaid floor]: figured inlaid work of wood for flooring; a kind of wood mosaic. The art of making inlaid-wood floors, until lately little in use in this country, has been much in vogue on the continent of Europe, and has been carried to great perfection. P. floors are usually of oak, but other and more ornamental woods also are largely used for giving variety and beauty to the pattern. In the more elaborate kinds of P., veneers are used; but it is much more frequently composed of blocks of wood squared at the sides and laid down so as to combine and form a geometric pattern. This work is now extensively employed in the better class of buildings.

PARR, CATHARINE: see CATHARINE PARR.

## PARR—PARRA.

PARR, or PAR, *pâr* : small fish, also called BRANDLING and FINGERLING in different parts of Britain, inhabiting rivers and streams, and formerly believed to be a distinct species of the genus *Salmo*, but now almost universally regarded as the young of the salmon (see SALMON). It is difficult to discriminate the young of different species of this genus. The parr rises with extraordinary readiness to the artificial fly; and until it began to receive protection as the fry of the salmon, vast numbers were killed by anglers.

PARR, SAMUEL, LL.D. : noted English scholar : 1747, Jan. 15—1825, Mar. 6; b. Harrow-on-the-Hill. He entered Emmanuel College, Cambridge, 1765; but the death of his father, two years afterward, necessitated his acceptance of an assistant-mastership at Harrow, where he remained five years. The head-mastership then becoming vacant, P. applied for it, but was rejected, whereupon he left, and started as an independent schoolmaster. In 1777 he was appointed master of Colchester School, where he was ordained priest, and obtained the curacies of Hythe and Trinity Church. Next year he became master of Norwich School; but 1786 settled at Hatton, in Warwickshire, where he spent the rest of his life. In 1787 he published an ed. of Bellen-den, to which he prefixed his celebrated preface, as remarkable for its uncompromising advocacy of whig principles as for the scrupulous Ciceronianism of its Latinity. It is not easy to understand the reputation which P. formerly had: none of his voluminous writings justify it. That he was in some respects an accomplished, even a great, scholar, is undoubted, for he wrote Latin of Ciceronian purity and finish; but it is equally undoubted that he never did anything with his famous scholarship. P. has left the world absolutely nothing to keep it in remembrance of him, yet his complete works (ed. by Dr. J. Johnstone 1828)—exclusive of his contributions to periodicals—form eight enormous tomes, 5,734 octavo pages, many in small type. They relate to matters historical, critical, and metaphysical; but in all ‘the thread of Parr’s verbosity is finer than the staple of his argument.’ What, then, gave him the fame that he certainly had during his life? Beyond question, it was his conversational powers. He was an amazing, an overwhelming, talker. Bold, dogmatic, arrogant, with a memory profoundly and minutely retentive, and with a genuine gift of ephemeral epigram, he seemed, at the tables of statesmen and wits and divines, to be a man of tremendous talent, capable of any literary feat; but the learning and the repartee have left little trace of their existence, and posterity declines to admire the wonders that it has neither seen nor heard. See De Quincey’s famous essay on *Dr. Samuel Parr on Whiggism in its Relations to Literature* (author’s ed., V., Edin., Adam and Charles Black 1862).

PAR’RA : see JACANA.

## PARRAKEET.

PARRAKEET, *pär'râ-kēt*, or PAROQUET, *pär'ō-ket* (also various forms—e.g., *Parakeeto*, *Paraquito*, *Paraquita*, *Paraquet*, *Perroquet*, etc.): name very commonly given to many of the smaller species of the parrot family; usually to species having long tails, natives of the E. Indies, Africa, and Australia; not so frequently to American species, though it is applied sometimes also to some of these, indifferently with the name Parrot (q.v.).—One of the most beautiful groups of the *Psittacidae*, combining gracefulness of form with splendor of plumage, is that to which the ALEXANDRINA P. or RING P. (*Palæornis Alexandri*) belongs. It is about the size of a common pigeon, green, with a red collar, whence its name Ring P., and is a native of the E. Indies. It



Warbling Grass or Zebra Parrakeet (*Melopsittacus undulatus*).

is said to have been brought to Europe by some of the company in Alexander the Great's expedition to India, and to have been the first of the parrot tribe known to the Greeks and Romans, by whom it was highly prized, as it still is, not only for its beauty, but for its docility and its power of imitating human speech. Like many of its tribe, it is gregarious, and immense flocks make their abode in some of the cocoa-nut groves of w. Ceylon, filling the air with their deafening screams. The Ring P. has many congeners, natives chiefly of the E. Indies, exhibiting much variety of splendid plumage.—Somewhat like them in length and form of tail, but with longer and stronger legs, is the GROUND P. or GROUND

## PARRAL—PARRHASIUS.

PARROT (*Pezophorus formosus*) of Australia, a bird once common in s. Australia and in Tasmania, but now nearly exterminated by cats run wild, which infest the scrubs. Its habits are very unlike those of parrots in general; it runs along the ground, and even seeks to escape from enemies by running, unwillingly takes wing, and then only for a short, low flight. It makes no nest, but lays its eggs in a hole in the ground. It is a small bird, not much more than 12 inches in entire length, one-half of which is occupied by the tail; its color, dark green above, yellowish below, less brilliant than in many of the parrot tribe, but finely marked and mottled. Its flesh has a very strong *game* flavor. There are numerous other Australian species, distributed in several genera, some of which, though less exclusively than that just noticed, live and seek their food on the ground. Some exhibit great splendor of plumage—e.g., ZEBRA P. (*Melopsittacus undulatus*), a very beautiful little species, which has often been brought to England, and has sometimes bred there. In the vast inland plains of Australia, this P. is seen in flocks of many hundreds, feeding on the seeds of the grasses, which afford food also to many other small species.

PARRAL, n. *pär'ral*, or PARREL, n. *pär'rël* [Port. *aparelho*; Sp. *aparejo*, tackle and rigging; F. *appareil*, gearing]: among *seamen*, the collars of greased ropes attached to the yards, and by which they slide up and down the mast.

PARRAMAT'TA: see PARAMATTA.

PARRAS, *pâr'râs*: well-built town of Mexico, state of Coahuila, 470 m. n.w. of Mexico, near the e. shore of Lake Parras. Pop. 8,000.

PARRHASIUS, *pär-râ'si-ÿs* or *pär-râ'shÿ-ÿs*: one of the greatest painters of anc. Greece: b. Ephesus, B.C. 5th c. (date of death unknown); son of Evenor, himself an artist. P. had gained distinction as an artist previous to B.C. 399. He practiced his profession at Athens, whose inhabitants held him in high estimation and conferred on him the rights of citizenship. He was already celebrated in the time of Socrates, with whom, according to Xenophon (*Mem.* 3, 10), he held a conversation; and was also a younger contemporary of Zeuxis. Seneca, who lived several hundred years after P., tells a monstrous story about him. He says that when P. was painting his *Prometheus Vinc-tus*, he got possession of one of the prisoners taken at the capture of Olynthus by Philip of Macedon, B.C. 347, and crucified him in his studio, that he might copy from life the expression of agony. Fortunately for P.'s memory, the story is chronologically impossible, as it would require us to suppose that he was still alive and painting when more than 100 years old. P. appears to have surpassed all his predecessors in purity of design, accuracy of drawing, force of expression, and what is technically called 'finish.' According to Pliny, he was the first who established a

## PARRICIDE—PARRISH'S CHEMICAL FOOD.

true proportion between the different parts of a picture, and delineated with elegance and precision all the minutiae of the features, even to those evanescent motions that betray the most delicate sentiments of the soul. He painted the extremities, such as the hands and fingers, in so exquisite a style that the intermediate parts seemed relatively—though *only* relatively—inferior. Quintilian calls him the legislator of his art, because his canon of proportion for gods and heroes was followed by all contemporary and subsequent painters. Among his works were an apparently symbolical picture of the Athenian *Demos* (*People*), a *Theseus, Naval Commander in Full Armor, Ulysses Feigning Madness, Castor and Pollux, Bacchus and Virtue, a Meleager, Hercules, and Perseus* on one canvas, a *Cretan Nurse with a Child in Her Arms, a Priest Officiating, with a Child Bearing Incense, Two Young Children, an Achilles, an Agamemnon*, etc. But his subjects were not always pure or lofty. His *Archigallus* (high-priest of Cybelè) and his *Meleager and Atalanta* were most licentious representations, and so greatly pleased Emperor Tiberius, a man of unbounded sensuality, that he kept them in his bedroom, and valued the second, in particular, at more than a million sesterces. P. was excessively proud and arrogant: he called himself the prince of painters, and claimed to be descended from Apollo; he also painted himself as the god Mercury, and then exposed his own portrait for the adoration of the crowd. His vanity was equal to his pride, and showed itself even in his gorgeous apparel. He dressed usually in a purple robe with a golden fringe, and wore boots with golden clasps.

PARRICIDE, n. *pār'ri-sīd* [F. *parricide*—from L. *parricīda*, murderer of a father—from *pater*, father; *cædo*, I kill: It. *patricida*]: murderer of a father or mother: the crime itself: also, a murderer of one to whom reverence is due; a destroyer or invader of his native country. P. is a popular rather than a legal term. In the Roman law it comprehended every one who murdered a near relative; but in English the term is usually confined to the murderer of one's father, or of one who is *in loco parentis*. Civil law in Britain and the United States does not define the crime. The P. does not, in any legal respect, differ at common law from the murderer of a stranger; in both cases, the punishment is death by hanging. In the Roman law, a P. was punished in a much more severe manner, being sewed up in a leather sack, with a live cock, a viper, dog, and ape, and cast into the sea, to take his fate with these companions. PAR'RICI'DAL, a. *-sī'dāl*, pert. to parricide, or tainted with it.

PAR'RISH'S CHEM'ICAL FOOD: popular name for a non-official preparation, named from its inventor, Dr. Parrish, of Philadelphia, and medicinally known as *Compound Syrup of Phosphate of Iron*, every dram of which contains 1 grain of phosphate of iron,  $2\frac{1}{2}$  of phosphate of lime, besides soda and potash.



## PARROT.

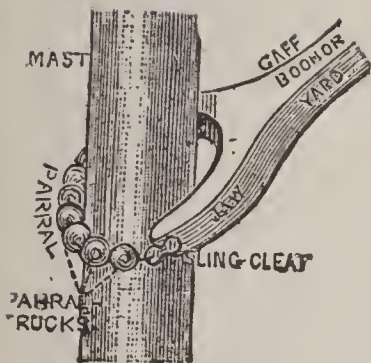
**PARROT**, n. *pär'rot* [contr. from F. *perroquet*, a parrot—from It. *perrochetto*: Sp. *Perico*, and its dim. *Periquito*, Peter, a parrot], (*Psittacus*): Linnæan genus of birds, now the family *Psittacidae*, of order *Scansores*, or Climbers (q.v.); comprehending a vast number of species, natives of almost all tropical and subtropical regions; a few species extending further n. and s., in America, in New Zealand, and in Tasmania. They are birds mostly of splendid plumage. They vary very much in size, from the Great Macaw, more than three ft. in length, tail included, to the little Love-birds, not larger than sparrows. They mostly are gregarious, and are seen often in vast flocks, usually inhabiting forests, and making their nests in trees, feeding chiefly on fruits and seeds, partly also on leaves and buds; but some live in open plains, feeding on the seeds of grasses and other plants, bulbs, and succulent parts of vegetables. The *Kea* or Mountain Nestor, a New Zealand P., has of late taken to attacking sheep and devouring the flesh of living animals, to the great damage of the flocks. The voices of the P. tribe are generally harsh and discordant, though some of the smaller kinds have not unpleasant voices; but many of the larger have remarkable power of imitating human speech, and in domestication become capable of articulating not only words, but sentences. They show more intelligence than is usual in birds, with a monkey-like restlessness and love of trick; and though docile and affectionate, are generally of capricious, irritable temper. They have a short, stout, hard beak, rounded on all sides, and enveloped at the base in a membrane in which the nostrils are pierced; the upper mandible generally much longer than the lower, much curved, and sharp-pointed. The tongue is almost always very large, thick, round, and fleshy; the muscles which move the mandibles are more numerous and powerful than in most other birds. They make use of the powerful hooked bill as well as of the feet in climbing trees; and employ their feet as hands for holding their food and bringing it up to the mouth. Their feet differ from those of all the other climbers, in being covered with small tubercle-like scales, instead of plates. Some have short and some have long tails. Most of them have short wings. Their intestines are very long and slender, and without cæca.

The *Psittacidae* are easily distinguished from all other birds; but their division into distinct subordinate groups has been found not so easy. While the name P. popularly includes all, except that it is seldom given to some of the smallest species, some are known by the names Macaw, Cockatoo, Parrakeet, Lory, Love-bird, etc.: see these titles. But some of these names are very vaguely applied; and though the P. family is regarded as consisting of a number of very natural groups, the characters and limits of these groups have not yet been very well defined.

The name P., in its most restricted sense, is applied

## PARROT.

sometimes to only those species which have the upper mandible very distinctly toothed, the lower mandible longer than it is high, and the tail short, and square or rounded; but this use is rather ornithological than popular; the most restricted popular use equally including long-tailed species, such as the Carolina P., ornithologically ranked with the macaws.—The CAROLINA P. (*Conurus Carolinensis*) is the species of which the n. range extends far beyond all others of its tribe, to the shores of Lake Michigan; though by the increase of cultivation, and the war waged against these birds for their depredations on orchards and corn-ricks, their numbers have been greatly diminished in regions where they were formerly plentiful. Its whole length is about 14 inches, of which about one-half is occupied by the tail; the general color is green, shaded with blue and diversified with orange, the wing primaries almost black. It is gregarious, prefers to roost in the holes of hollow trees, and in such situations also the females lay their eggs. It seems to love salt, frequenting salt licks, like pigeons. It is easily tamed, but does not acquire the power of articulation.—Of the short-tailed parrots, one of the best known is the GRAY P. (*Psittacus erythacus*), a w. African species, about the size of a small pigeon, of ash-gray color, with crimson tail. It is famous for its docility, its power of articulation and of imitating noises of all kinds, its loquacity, and its mischievousness. It is very often brought to northern and western countries, and often lives to a great age in confinement: individuals have been known to attain nearly 100 years.—The GREEN PARROTS (*Chrysotis*), natives of tropical S. America, also are among the short-tailed parrots most frequently seen in N. America and Britain.



Parral.



Rosella Parrot (*Platycercus eximius*).



Pastern.—a, Great pastern; b, Less pastern; c, Coffin-bone.



Partizan.



Cross Patée Fitchée.



Red legged Partridge (*Perdix rufus*).

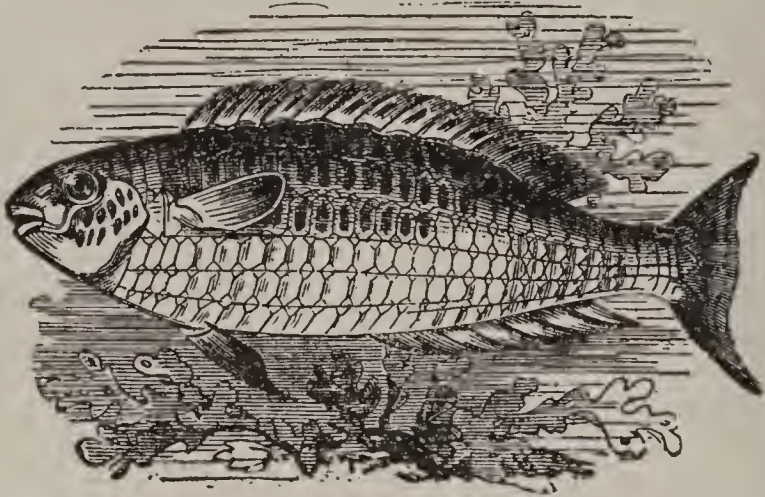


Parvis.

## PARROT-COAL—PARROT-FISH.

**PAR'ROT-COAL**: cannel or gas coal that burns very clearly; named from its spirting or flying in pieces with a crackling or chattering noise when suddenly placed in the fire.

**PAR'ROT-FISH** (*Scarus*): genus of fishes of family *Labridæ* (q.v.) or *Cyclo-Labridæ*; of oblong, massive form, with large scales, and remarkable for the structure of their jaws and teeth, the jaws being divided into



Parrot-fish (*Scarus harid*).

halves by a median suture, the teeth incorporated with the bone in crowded quincuncial order, the surface even and polished in some species and rough in others, the oldest teeth forming the trenchant border of the jaw, and being succeeded by others as they are worn away, while new ones are formed behind. The species are numerous. Some feed on fuci, and some on corals, the younger branches of which they crush, so that the animal part affords them nourishment, while the calcareous part is rejected. They are fishes generally of brilliant colors, some of them of wonderful splendor; and have received the name parrot-fish partly on this account, partly on account of fancied resemblance in their jaws to a parrot's bill. Most of them are natives of tropical seas. One species is found in the Mediterranean (*S. Creticus*), the *Scarus* of the ancients, of which many wonderful stories were told, as to its love, its wisdom, its ruminating, its emitting of sounds, etc., and which was esteemed the most savory and delicate of all fishes. It is still held in high esteem for the table. The Greeks cook it with a sauce made of its own liver and intestines.

PARROTT—PARRY.

PARROTT, *pär'rot*, ENOCH GREENLEAF: naval officer: 1815, Nov. 27—1879, May 10; b. Portsmouth, N. H. At the age of 16 he became a midshipman in the navy, was promoted lieut. 1841, and was in service under Com. M. C. Perry on the w. African coast 1843. In the Mexican war he served at various points; he also rendered brilliant service in numerous engagements in the civil war. He was prominent in the capture of the privateer *Savannah*, the battle at Port Royal, on the James river, and the battles at Fort Fisher 1864, Dec., and 1865, Jan. At the latter point he commanded the *Monadnock*. For his bravery and skill he received high commendation from the navy dept. He received a commission as commander 1861, capt. 1866, commodore 1870, rear-admiral 1873, and was retired 1874. He died in New York.

PAR'ROTT, ROBERT PARKER: 1804, Oct. 5—1877, Dec. 24; b. Lee, N. H. He graduated from West Point 1824; was connected with the artillery, but served as asst. prof. at the milit. acad. 5 years; was in garrison service 1831-34, when he was placed on ordnance duty; became capt. of ordnance 1836, with headquarters at Washington, but resigned Oct. of the same year, to become supt. of the West Point iron and cannon foundry at Cold Spring, N. Y. At the latter place he invented and brought to a high degree of perfection the forms of rifled cannon and projectiles which have received his name, and of which large numbers were used by the govt. in the civil war. He was judge of the common pleas county court 1844-47. He resigned the superintendency of the foundry 1867, after which time he was connected with various private manufacturing enterprises. He died at Cold Spring, N. Y.

PARRY, v. *pär'rĩ* [It. *parare*; F. *parer*, to keep off, to ward off: L. *parārē*, to get ready: It. *parata*, a defense, guard]: to ward off, as a blow or thrust; to fence. PAR'RYING, imp. PAR'RIED, pp. *-rĩd*.

PARRY, *pär'rĩ*, Sir WILLIAM EDWARD, commonly known as Sir EDWARD PARRY: celebrated English navigator: 1790, Dec. 19—1855, July 7; b. Bath. His father, who was a physician of some eminence, intended him for the medical profession; but, acting on the advice of a friend, entered him as a first-class volunteer on the *Ville-de-Paris*, flag-ship of the Channel fleet, 1803. After several years' service, he received his commission as lieut. 1810, Jan. 6. Though thus early engaged in active service, his education had not been neglected; at school he had attained considerable eminence in classical knowledge, and for the first five years after entering the navy he had particularly studied French and mathematics under the chaplain's superintendence, after which he constantly employed his leisure time in nautical and astronomical studies. 1810, Feb., he was sent to the Arctic regions in command of a ship, to protect the British whale fisheries and improve the admiralty charts of those regions; but 1813 he was recalled and dispatched to join the fleet then blockading the coast of

## PARSE.

the United States. He remained on the N. American station till the spring of 1817, and during this time he wrote and distributed MS. copies of a work entitled *Nautical Astronomy by Night*, in which rules were given for determining accurately the altitude of the pole by observations of the fixed stars. This work he subsequently published in London. Having returned to England too late to take part in the African exploring expedition, he was, at his urgent request, backed by the recommendations of the sec. to the admiralty, appointed to command the *Alexander*, under the orders of Capt. John Ross in the *Isabella*, and dispatched in search of the 'North-west Passage' (q.v.) 1818, April. The expedition returned to England, having made no important discoveries. The admiralty were dissatisfied with the report of Capt. Ross; and P.'s opinion, though communicated only to his private friends, having become known, he was sent out (1819, May), and began that career of discovery (see NORTHEAST AND NORTHWEST PASSAGES) which has given him rank among the greatest Arctic explorers. P. on his return to Britain was hailed with the utmost enthusiasm, and was made commander (1820, Nov. 4), and a member of the Royal Soc. He subsequently made a second and a third voyage to the same regions, but effected nothing further of importance. P. then applied himself to his duties as hydrographer; but such labors were too monotonous for one of his temperament, and he accordingly prepared a plan of an expedition for reaching the n. pole; which being submitted to the admiralty and approved of by them, his old ship the *Hecla* was fitted out for a polar expedition, and P. set sail in her, accompanied by Lieut. J. C. Ross, 1827, Apr. 4: see POLAR EXPEDITIONS.

P.'s career as an explorer was now closed, and he again returned to his duties as hydrographer; but his health gave way under this sedentary mode of life, and he exchanged his office for that of commissioner to the Agricultural Company of Australia, for which country he sailed 1829, July 20. He returned to England 1834, Nov., and filled, in succession, various govt. appointments till 1846, Dec., when he retired from active service, receiving a sinecure office. 1852, June 4, he was raised to the rank of Rear-Admiral of the White, and in the following year was appointed lieut.gov. of Greenwich Hospital—an office which he held till his death at Ems, in Germany, whither he had gone for benefit of his health. A complete ed. of his voyages was published 1833 (Lond. 5 vols.). His life has been written by his son, the Rev. Edward Parry, M.A., of Balliol College, Oxford (1857).

PARSE, v. *pârs* [L. *pars*, a part, as in *pars oratiōnis*, a part of speech]: to resolve a sentence into its elements; to name the parts of speech in a sentence, and to tell their relation to each other. PARS'ING, imp.: N. the art or act of resolving a sentence into its elements. PARSED, pp. *pârst*. PARS'ER, n. *-ér*, one who can parse, or who parses.

## PARSEE.

PARSEE, n. *pâr'sê*, PARSEES, n. plu. *pâr'sêz* [Pers. *Parsi*, a Persian, a fire-worshipper—from *Pars*, or *Fars*, anc. Persia]: one of the Persian refugees driven out of their own country by the Mohammedans, now living in various parts of India. PAR'SEEISM, n. *-izm*, fire-worship, the religion of the Parsees, spelled also PARSĪ, n. *pâr'sê*, PARSIS, n. plu. *pâr'sêz*.—The *Parsees* are the small remnant of the followers of the ancient Persian religion, as reformed by Zerdusht, or Zoroaster, as he is commonly called. They are known also as *Guebres* (see that title for their recent history and present numbers). The pre-Zoroastrian phase or phases of their primeval religion will probably forever remain shrouded in obscurity; however, it is established by recent investigations, that this, and what afterward became the Brahmanic religion, were originally identical; that in consequence of certain social and political conflicts between the Iranians and the Aryans, who afterward peopled Hindustan proper, an undying feud arose, in the course of which the former forswore even the hitherto common faith, and established a counter faith (*Ahura*), a principal dogma of which was the transformation of the ancient, now hostile, gods into demons, and the branding of the entire *Deva* religion as the source of all mischief and wickedness. Zerdusht, the prophet, whose era is given very differently by ancient writers and by modern investigators — placed variously between B.C. 500 or 600 (Röth) and B.C. 1200 (Haug) — had, like all prophets and reformers, many predecessors, chiefly among the *Soshyantos* or fire-priests (*Atharvans*); yet to him belongs the decisive act of separating forever the contending parties, and of establishing a new community with a new faith—the *Mazdayasna* or *Parsee* religion proper, which absorbed the old *Ahura* religion of the fire-priests. For summary of what is known and speculated about the person of the great reformer, see ZOROASTER. As to his doctrines, the principle of his theology was pure Monotheism: he taught the existence of one only deity, the *Ahura*, who is called *Mazdaô* (see ORMUZD), creator of all things, to whom all good things, spiritual and temporal, belong. The principle of his speculative philosophy is dualism, i.e., the supposition of two primeval causes of the actual and intellectual world; the *Vohu Manô*, the Good Mind or Reality (*Gaya*), and the *Akem Manô*, or the Naught Mind, or Non-reality (*Ajyâiti*); while the principle of his moral philosophy is the triad of Thought, Word, and Deed. Not long, however, did the pure idea of Monotheism prevail. The two sides of *Ahura Mazdaô*'s being were taken to be two distinct personages — God and Devil — and they each took their due places in the *Parsee* pantheon in the course of time — chiefly through the influence of the sect of the *Zendiks*, or followers of the *Zend*, i.e., Interpretation. According to Zerdusht, there are two intellects, as there are two lives—one *mental* and one *bodily*; and, again, there must be distinguished an *earthly* and a *future* life. The im-

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mortality of souls was taught long before the Semites had adopted this belief. There are two abodes for the departed—Heaven (Garô-Demâna, the House of the Angels' Hymns, Yazna, xxviii. 10; xxxiv. 2; cf. Is. vi., Revelat., etc.) and Hell (Drâjô-Demâna, the residence of devils and the priests of the Deva religion). Between the two there is the Bridge of the Gatherer or Judge, which the souls of the pious alone can pass. There will be a general resurrection, which is to precede the last judgment, to foretell which Sosiosh (Soskyans), the son of Zerdusht, spiritually begotten (divided by later priests into three persons), will be sent by Ahuramazdao. The world, which by that time will be utterly steeped in wretchedness, darkness, and sin, will then be renewed; death, the arch-fiend of creation, will be slain, and life will be everlasting and holy. These are the outlines of the Zoroastrian creed, as it flourished till the time of Alexander the Great, throughout ancient Irania, including Upper Tibet, Cabulistan, Sogdiana, Bactriana, Media, Persis, etc.; and it is interesting to speculate on the consequences which might have followed Marathon and Salamis had the Persians been victorious. The religion of Ormuzd would have dethroned the Olympians, as it dethroned the gods of the Assyrians and Babylonians; and it would certainly have left its traces on the whole civilized world unto this day in a much more direct and palpable shape than it now does. From the death of Alexander, however, it gradually lost ground, and rapidly declined under his successors, until, in the time of Alexander Severus, Ardshir 'Arianos' (cf. Mirkhond ap. de Sacy, *Mémoires sur div. Aut. de la Perse*, etc., p. 59), son of Babegan, called by the Greeks and Romans Artaxerxes or Artaxares, who claimed descent from the ancient royal lineage of Persia, took the field against Artabanus, and slew him (225), thus putting an end to the 400 years' rule of the Parthians, and founded the Sassanide dynasty. This he effected in conjunction with the national Persians, who hated the 'semi-Greek' dynasty of the Arracidæ, their leaning to the foreign, and contempt for the Zend religion, and finally for their powerlessness against the spreading conquests of the Romans. The first act of the new king was the general and complete restoration of the partly lost, partly forgotten books of Zerdusht, which he effected, it is related, chiefly through the inspiration of a Magian sage, chosen out of 40,000 Magians. The sacred volumes were translated out of the original Zend into the vernacular, and distributed among the people at large, and fire temples were reared throughout the length and breadth of the land. The Magi or priests were all-powerful, and their hatred was directed principally against the Greeks. 'Far too long,' wrote Ardshir, the king, to all the provinces of the Persian empire, 'for more than 500 years, has the poison of Aristotle spread.' The fanaticism of the priests found vent often also against Christians and Jews. The Jews have left some account of the tyranny



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and oppression to which they as unbelievers were exposed—such as the prohibition of fire and light in their houses on Persian fast-days, of the slaughter of animals, the baths of purification, and the burial of the dead according to the Jewish rites—prohibitions to be bought off only by heavy bribes. In return, the Magi were cordially hated by the Jews, and remain branded in their writings by the title of demons of hell (*Kidushin*, 72 a.). To accept the instruction of a Magian is pronounced by a Jewish sage to be an offense worthy of death (*Shabb.* 75 a.; 156 b.). This mutual animosity does not, however, appear to have long continued, since in subsequent times we frequently find Jewish sages (Samuel *the Arian*, etc.) on terms of friendship and confidence with the later Sassanide kings (cf. *Moed Katan*, 26 a. etc.). From the period of its re-establishment, the Zoroastrian religion flourished uninterruptedly about 400 years, till, A.D. 651, at the great battle of Nahavand (near Ecbatana), the Persian army, under Yezdezird, was routed by the Caliph Omar. For the subsequent fate of those that remained faithful to the creed of their fathers, see GUEBBES. At present, some remnants inhabit Yezd and Kirmân, on the ancient soil of their race; others, who preferred emigration to the endless tribulations inflicted on them by the conquering race, found a resting-place along the w. coast of India, chiefly at Bombay, Surat, Nawsari, Achmedâbâd, and the vicinity, where they now live under English rule, and are recognized as one of the most respectable and thriving sections of the community, being mostly merchants and landed proprietors. Equally with their poorer brethren in Persia, with whom they have of late renewed some slight intercourse for religious and other purposes—such as their Rivâyets or correspondences on important and obscure doctrinal points—they bear the highest character for honesty, industry, and peacefulness; while their benevolence, intelligence, and magnificence in living outvies that of most of their European fellow-subjects. Their general appearance is to a certain degree prepossessing, and many of their women are strikingly beautiful. In all civil matters they are subject to the laws of the country that they inhabit; and its language is theirs also, except in the ritual of their religion, when the holy language of Zend is used by the priests, who, as a rule, have no more knowledge of its meaning than the laity.

We have spoken of the leading fundamental doctrines as laid down by their prophet. Of their very copious rituals, which have partly found their way into other creeds, the following are a few points. They do not eat anything cooked by a person of another religion; they also object to beef, pork, especially to ham. Marriages can be contracted only with persons of their own caste and creed. Polygamy, except after nine years of sterility and divorce, is forbidden. Fornication and adultery are punishable with death. The bodies of their dead are not buried, but exposed on a Dakhma, or Tower of Si-

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lence, that they may be dissipated without polluting the earth.

Ahuramazdao being the origin of light, his symbol is the sun, with the moon and the planets; and in default of these, the fire; and the believer is enjoined to face a luminous object during his prayers. Hence, also, the temples and altars must forever be fed with the holy fire, brought down, according to tradition, from heaven, the sullyng of whose flame is punishable with death. The priests themselves approach it only with a half-mask (Penom) over the face, lest their breath should defile it, and never touch it with their hands, but with holy instruments. The fires are of five kinds; but however great the awe felt by Parsees with respect to fire and light (they are the only eastern nation who abstain from smoking—because of their reverence for fire), yet they never consider these as anything more than emblems of Divinity. There are also five kinds of ‘Sacrifice,’ which term, however, is to be understood rather in the sense of a sacred action. These are—the slaughtering of animals for public or private solemnities; prayer; the Daruns sacrament, which, with its consecrated bread and wine in honor of the primeval founder of the law, Hom or Heomoh (Skr. *Soma*), and Dahman, the personified blessing, bears a striking outward resemblance to the Christian ordinance of the Lord’s Supper; the sacrifice of Expiation, consisting either in flagellation, or in gifts to the priest; and, lastly, the sacrifice for the souls of the dead. The purification of physical and moral impurities is effected, in the first place, by cleansing with holy water (Nirang), earth, etc.; next, by prayers (of which 16, at least, are to be recited every day) and the recitation of the divine word; but other self-castigations, fasting, celibacy, etc., are considered hateful to the Divinity. The ethical code may be summed up in the three words—purity of thought, of word, and of deed: a religion ‘that is for all, and not for any particular nation,’ as the Zoroastrians say. It need hardly be added, that superstitions of all kinds have, in the course of the tribulations of ages, and the intimacy with neighboring countries, greatly defiled the original purity of this creed, and that its forms now vary much among the different communities of the present time.

A schism which seems very serious has lately broken out in the Parsee communities, and the modern terms of Conservative and Liberal, or rather bigot and infidel, are almost as freely used with them as in Europe. The sum and substance of these innovations, stoutly advocated by one side, and as stoutly resisted by the other, is the desire to abolish the purification by the Nirang (cow-urine), to reduce the large number of obligatory prayers, to stop early betrothal and marriage, to suppress the extravagance in funerals and weddings, to educate women, and to admit them into society. Two counter alliances or societies, the ‘Guides of the Worshippers

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of God' and 'the True Guides' respectively, are now trying to carry out, by meetings, speeches, tracts, etc., the objects of their opposing parties. The present number of the P. is stated to be in all not much more than 80,000. There are but two castes among them—the priests and the people: the priesthood is hereditary. In business, the P. have great sagacity and enterprise; their commercial credit stands at the highest; and they have many large business houses in principal ports of Asia, besides some in Africa and Europe.

For the literature of the Parsees, see PERSIAN LANGUAGE AND LITERATURE: ZEND-AVESTA. Besides the latter, written in ancient Zend, and its Gujarati translation and commentaries, there are to be mentioned, as works treating specially of religious matters, the *Zardusht-Nameh*, or Legendary History of Zerdusht; the *Sadder*, or Summary of Parsee Doctrines; the *Dabistan*, or School of Manners; the *Desatir*, or Sacred Writings, etc. All these have been translated into English and other European languages.

On the influence Parsism has had upon Judaism and its later doctrines and ceremonial, and, through it, upon Christianity and Mohammedanism—which besides drew from Parsism directly—it may be stated that even a cursory reading of the sacred Parsee books will show, in a variety of points, their direct influence on the three Semitic creeds. Of works on the Parsees, consult, principally, Hyde, *Vet. Rel. Pers. Hist.* (Oxon. 1760, 4to); Ouseley, *Travels in the East* (Lond. 1819); Anquetil du Perron, *Exposition des Usages des Parses*; Dosabhoj Framjee, *The Parsees*, etc. (1858); Dosabhai Framji Karaka, c. s. l., *The History of the Parsis* (2 vols. 1884); Dadabhai Naoroji, *The Manners and Customs of the Parsees*; and *The Parsee Religion* (Liverpool 1861, 8vo.; Haug's *Essays on the Parsee Religion* (Bombay 1862), and Spiegel's *Erân* (Berl. 1863).

PARSIMONY, n. *pâr'sî-môn-î* [F. *parsimonie*—from L. *parsimōniā*, frugality—from *parcus*, sparing: It. *parsimonia*]: sparingness in the use and expenditure of money; frugality; excessive caution in the expenditure of money; closeness. PAR'SIMO'NIOUS, a. *-mō'nî-ūs*, sparing in the use of money; covetous. PAR'SIMO'NIOUSLY, ad. *-lî*. PAR'SIMO'NIOUSNESS, n. *-nēs*, a very sparing use of money; a disposition to save expense. LAW OF PARSIMONY, in *metaph.*, rule that no fact be assumed as a fact of consciousness but what is ultimate and simple.—SYN. of 'parsimonious': sparing; saving; frugal; economical; thrifty; penurious; niggardly; avaricious; miserly; close; illiberal: see also PARCIMONY.

## PARSLEY—PARSNIP.

**PARSLEY**, n. *pârs'li* [F. *persil*—from L. *petroselinum*, rock-parsley—from Gr. *petros*, a rock; *selinon*, a kind of parsley], (*Petroselinum*): genus of plants of nat. order *Umbelliferae*. The species are annual or biennial, branching, smooth, herbaceous plants, with variously pinnated leaves.—COMMON P. (*P. sativum*), which has tripinnate shining leaves, is a native of s. Europe, growing chiefly on rocks and old walls, and naturalized in parts of England and in the United States. The cultivation is extremely simple, and an annual sowing is generally made, though when cut over and prevented from flowering, the plant lives several years. A variety with curled leaflets is generally preferred to the common kind with plain leaflets, as finer and more beautiful, being often used as a garnish; it is also safer, as the poisonous Fool's P. (q.v.) is sometimes gathered by mistake instead of the other.—HAMBURG P. is a variety with a large white carrot-like root, cultivated for its root, and much in the same way as the carrot or parsnip. To produce large roots and of delicate flavor, a very rich soil is required. The foliage of P. is of use not only for garnish and flavor, but also as nutritious and stimulating—deriving its stimulant quality from an essential oil present in every part of the plant. P. contains also a peculiar gelatinous substance called *Apiine*. The bruised leaves of P. are applied sometimes as a stimulating poultice. The seeds are a deadly poison to many birds: when powdered, they are sometimes used for killing lice.

**PARSNIP**, n. *pârs'nîp* (formerly *Parsnep*) [corruption of L. and It. *pastināca*, a parsnip—from L. *pastināre*, to dig and trench: OF. *pastenaque*: Dut. *pastinak*, a parsnip: the *nep* of the Eng. name is probably the *nip* of *turnip*, signifying a tap-root], (*Pastinaca*): genus of plants of nat. order *Umbelliferae*, having compound umbels with neither general nor partial involucre; yellow flowers with roundish, involute, sharp-pointed petals; calyx almost without teeth; fruit dorsally compressed and flat, with a broad border, the ridges very fine. The species are annual, biennial, or perennial herbaceous plants, with carrot-like, often fleshy roots, and pinnate leaves.—The COMMON P. (*P. sativa*) is a biennial, with angular furrowed stem, 2–3 ft. high, pinnate leaves with ovate leaflets, rather shining, cut and serrated, and a three-lobed terminal leaflet.—Another species, the CUT-LEAVED P. or SEKAKUL (*P. Sekakul*), having pinnatifid cut leaflets, native of India, Syria, and Egypt, is cultivated in the Levant, and is very similar in its uses to the common parsnip.

The P. grows wild in large portions of Europe and Asia, was cultivated by the Romans, and was brought to this country by the early explorers. If neglected, the P. soon reverts to its original type, becomes unfit for food, and even assumes poisonous properties. The wild P. of the United States is the ordinary P. escaped from control. Under cultivation the P. is one of the most nutritious roots. It is excellent for the table, and second

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only to the sugar beet (see SUGAR BEET) for live-stock. It is specially valuable for cows giving milk. The percentages of the digestible constituents of the roots are given as follows: albuminoids, 1.6; carbo-hydrates, 11.2; fats, 0.2. In England and Ireland, a kind of wine is made from the roots and in the latter country a fermented liquor is made with the addition of hops and yeast.

The P. thrives best on a deep, rich soil, whether in loams or clays. The ground should be deeply plowed and a liberal dressing of wood ashes or commercial fertilizer harrowed in. For garden crops rows may be only 12 to 15 in. apart but in field culture the distance should be doubled. Sowing must be done very early in the spring. Seed should be used at the rate of 5 to 8 lbs. per acre, according to the distance apart of the rows. As soon as the rows can be seen, cultivation should commence, and weeds must be kept down during the entire season. When the plants are well started they are to be thinned to stand 4 to 6 in. apart. As their most rapid growth is made very late in the fall, the roots should remain as long as they can without being frozen into the ground. Harvesting can be facilitated by the use of a large plow; the tops having been cut with a sharp hoe and raked off from the land. Where large crops of roots of any kind are grown, a double plow, made specially for lifting such crops, is of great value. The roots should be stored in a cool cellar or a dry pit where they can be kept from the light and from currents of air. Part of the crop is usually left in the ground over winter, as the quality of the roots is thus improved, but harvesting must be done before growth begins in the spring. The seed usually retains its vitality only one year; but if well kept, a small proportion will germinate the second season. It should be grown from the best roots and only the finest heads should be saved. The roots grow 15 to 20 inches in length, but those of a kind in the island of Guernsey are said to be 3 to 4 ft. long. About 15 varieties are grown in the United States. Of these, the Student, developed from the wild form by Prof. Buckman of England, is one of the best for table use.

PARSON, n. *pâr'sn* [L. *persōna*, the person, in mid. L. dignity or office: mid. L. *persōna ecclēsīæ*, the person who represents the church in a parish]: rector of a parish; the ecclesiastical incumbent; a clergyman; a man in orders. PARSONAGE, n. *pâr'sn-āj*, house set apart for the residence of the incumbent of a parish: in the United States, house and appurtenances, provided by a church for its pastor's residence.—*Parson*, in English ecclesiastical law, is the incumbent of a benefice in a parish. He is called parson (Lat. *persona*) as being distinctively the *person* who represents the church for several purposes. He is required to be a member of the Established Church of England, and to be duly admitted to holy orders, presented, instituted, and inducted; and

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to be 23 years of age. His induction puts him in full possession of the incumbency. The theory is, that the freehold of the parish church is vested in him, and as the legal owner, he has various rights of control over the chancel. He is also the owner of the churchyard, and as such is entitled to the grass. As owner of the body of the church, he has a right to control of the church bells, and is entitled to prevent the churchwardens from ringing them against his will. The distinction between a P. and vicar is, that the P. has generally the whole right to the ecclesiastical dues in the parish, whereas the vicar has an appropriator over him, who is the real owner of the dues and tithes, and the vicar has only an inferior portion. The duty of the P. is to perform divine service in the parish church under the control of the bishop, to administer the sacraments to parishioners, to read the burial-service on request of the parishioners, to marry them in the parish church when they tender themselves. He is bound to reside in the parish, and is subject to penalties and forfeiture, if he without cause absent himself from the parish. He is subject to the Clergy Discipline Act, in case of misconduct.

PARSONS, *pâr'sonz*: city in s.e. Kansas, near the n. border of Labette co., on the main line, and terminus of the Neosho division of the Missouri Kansas and Texas railroad; and on the Cherry Vale branch of the Kansas City Fort Scott and Gulf railroad; 48 m. s.s.w. of Fort Scott, 35 m. s.s.e. of Humboldt, and 32 m. n.e. of Independence. It has ranked as the 9th city in the state; assessed valuation (1884) \$887,714. It is the seat of the machine-shops of the Missouri Kansas and Texas r. r., which give employment to a large number of hands, and represent a large investment of capital; and has also furniture and plow manufactories. It has a national bank, a savings bank, excellent public schools, churches of the principal denominations, 3 daily and 2 weekly newspapers, and one of the principal libraries in the state. Pop' (1890) 6,736; (1900) 7,682.

PARSONS, SAMUEL HOLDEN: lawyer and soldier: 1737, May 14—1789, Nov. 17; b. Lyme, Conn.; son of the Rev. Jonathan P. He graduated at Harvard 1756; studied law, and was admitted to practice 1759; and was a member of the state assembly 17 consecutive sessions. In 1773 he acted on a state committee of inquiry, and was the author of the plan for a congress, which met later in New York. He became king's atty. 1773, and settled at New London. He served from 1770 as maj. of 14th militia regt. and 1775, Apr. 26, became col. of the 6th regt. at Roxbury, Mass., and later at New York. On information from Benedict Arnold, he planned, Apr. 27, the capture of Ticonderoga; and with a few associates, and means secured by his own bond, carried a party of picked men to meet Ethan Allen with a small force hastily raised, at Bennington, Vt. Under Allen's command, 83 men surprised the fort and

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took 50 prisoners, May 9. P. was in the battle of Long Island, 1776, Aug.; was made brig.gen. soon afterward; was made maj.gen. 1780, succeeded Putnam in command of the Conn. line, and served to the close of the war. He settled after the war at Middletown, Conn., was one of the originators of the plan to settle Ohio, was named by Washington the first judge for the N. W. Terr., 1788, and settled near Marietta, O. He was drowned on his return from service as an Indian commissioner.

PAR'ONS, THEOPHILUS, LL.D.: jurist: 1750, Feb. 24—1813, Oct. 13; b. Byfield, Mass., son of the Congl. minister of that place. He was graduated at Harvard 1769, and began to practice law 5 years later at Portland, then a part of the town of Falmouth. On the destruction of the place by British ships, 1775, he returned to his native place, afterward settled in Newburyport, and finally 1800 in Boston, where, from 1806 to his death, he was chief justice of the supreme judicial court. In 1779 he opposed the constitution submitted by the Mass. legislature, and was member of the convention which prepared the constitution that was adopted. In 1888, as member of the convention to ratify the federal constitution, he was prominent in conciliatory measures. His law practice was extensive in the eastern states; his scholarship superior. No Federalist leader was more prominent and influential than he; and his Essex co. convention report, 1776, known as the 'Essex Result,' written at the age of 26, is regarded as the first and fullest exposition of republican principles, in our national history. Judge P. died in Boston. His judicial opinions were published under the title *Commentaries on the Law of the United States*, and are valuable especially on the 'laws of pleading, marine insurance, and real property.'

PAR'ONS, THEOPHILUS, LL.D.: jurist: 1797, May 17—1882, Jan. 26; b. Newburyport, Mass.; son of Theophilus P., LL.D. He graduated at Harvard 1815; practiced law in Taunton, Mass., and later in Boston. In 1848 he was appointed law prof. in Harvard Univ.; resigned 1869. He established and edited the *United States Literary Gazette*, and was a contributor to the *N. Amer. Review* and other periodicals. His law publications were: *The Law of Contracts* (1853); *Elements of Mercantile Law* (1856); *Laws of Business for Business Men* (1857); *Treatise on Maritime Law* (1859); *The Law of Promissory Notes and Bills of Exchange* (1863); *The Law of Partnership* (1867); *Marine Insurance and General Average* (1868); *The Political, Personal, and Property Rights of a Citizen of the United States* (1875). Besides these, he published, accordant with Swedenborgian doctrine, of which he was an earnest and able advocate, *Sunday Lessons* (1838); *Essays* (1845), and second series (1855) on the senses, sorrow, Sabbath, duty, death and life, etc.; and *Deus-Homo, God-Man* (1867); also a philosophical work, *The Infinite and the Finite* (1872). A new edition of his work on business is entitled *Laws of Business in all the States and Territories and Canada.* =

## PARSONS—PÂRSWANÂTHA.

PARSONS, THOMAS WILLIAM, M.D.: poet and translator: 1819, Aug. 18—1892 Sep. 3: b. Boston, Mass. He was educated at the Boston Latin school; visited Italy 1836, and studied Italian literature; translated the first 10 cantos of Dante's *Inferno* (Boston 1843); returned home, studied and practiced dentistry; then resided several years in England; and from 1872 applied himself wholly to literature. A volume of his poems, *Ghetto di Roma*, was published 1854; and his completed translation of the *Inferno* with illustrations 1867; also *The Magnolia* 1867 (printed privately); *The Old House at Sudbury* 1870; and *The Shadow of the Obelisk* (London 1872). In Longfellow's *Wayside Inn*, the poet is P., to whose verse are applied the terms 'tender, musical, and terse.' He continues to contribute occasional poems to publications in Boston and elsewhere, but remains, as Longfellow described him,

“ ——— not too eager for renown,  
Accepts, but does not clutch the crown.”

PARSONSTOWN (anciently called BIRR): considerable inland town on the river Brosna, King's county, Ireland, 69 m. w.s.w. from Dublin, with which city it is connected by a branch-line issuing from the Great Southern and Western railway at Ballybrophy. Birr had its origin at an early period in a monastery founded by St. Brendan, and was the scene of many important events, in the Irish and in the post-Invasion periods. The castle, anciently the seat of the O'Carrols, was granted by Henry II. to Philip de Worcester; but it frequently changed masters, and even alternated between English and Irish hands. By James I., it was granted to Lawrence Parsons, ancestor of the present proprietor, the Earl of Rosse; but through the entire period of the civil wars, its possession was constantly disputed, until after 1690, when the Parsons family was finally established in possession. The castle has been rebuilt. P. is one of the handsomest and best built inland towns in Ireland, with several fine churches and chapels, a nunnery, a statue of the Duke of Cumberland, a bronze statue (erected 1876) of the third Earl of Rosse, a town-hall, a library, and literary institute. The great attractions of P. are the castle, the observatory, and the laboratory of the late Earl of Rosse (q.v.), still maintained in active use by the present earl. P. is an important corn-market, but is almost without manufactures.—Pop. (1881) 4,955, of whom about 4,000 are Rom. Catholics, 700 Prot. Episcopalians; (1891) 4,313.

PÂRS'WANÂTHA: the 23d of the deified saints of the Jainas, in the present era. He and *Mahavîra*, the 24th, are held in highest esteem, especially in Hindustan. In a suburb of Benares, called Belupûra, there is a temple honored as the birthplace of Pârs'wanâtha. See JAINAS.



## PART—PARTHENIC ACID.

**PART**, n. *pârt* [F. *part*, a share—from L. *partem*, a part, a piece or portion: It. *parte*]: a piece or fragment separated from a whole thing; a portion or share; something less than the whole; an ingredient; a proportional quantity; concern or interest; a character or personage in a play; something relating or belonging to, as, for my *part*; particular office or character; side; party: in *music*, one of several series of sounds performed simultaneously. **V.** [L. *partirë*; It. *partire*, to part, to share: F. *partir*, to set out, to go away]: to separate or divide; to distribute; to break, as a rope; to keep asunder; to be separated; to quit each other; to go away; to take or bid farewell; to have share. **PARTS**, n. plu. *pârts*, powers; accomplishments; quarters; districts. **PART'ING**, imp.: **ADJ.** serving to part; separating: **N.** a separation; in *geol.*, any thin subordinate layer occurring between two main beds; a joint or fissure, as in a coal-seam. **PART'ED**, pp.: **ADJ.** separated; divided; in *bot.*, subdivided into similar segments, the divisions extending nearly to the base. **PART'ER**, n. *-ër*, one who parts. **PART'LY**, ad. *-lÿ*, in part; not wholly. **PARTIBLE**, a. *pârt'ÿ-bl*, that may be separated; divisible. **PART'IBIL'ITY**, n. *-bÿl'ÿ-tÿ*, susceptibility of division or severance. **IN GOOD PART**, in a friendly manner. **IN ILL PART** with displeasure. **FOR THE MOST PART**, commonly. **FOR MY PART**, so far as it concerns me; for my share. **IN PART**, in some degree; partly. **PART AND PARCEL**, an essential portion; a part. **PART OF SPEECH**, one of the classes of words into which the language is grouped. **TO PART WITH**, to quit; to resign; to be separated from. **PARTING-SAND**, in *foundry*, burnt sand employed to separate and keep apart the sand in the different sections of a mold.—**SYN.** of 'part, n.': portion; fraction; fragment; quantity; member; particular; share; constituent; division; section; concern; interest; office; business; duty; action; conduct; —of 'parts': qualities; powers; faculties; accomplishments; quarters; regions; districts.

**PARTAKE**, v. *pâr-tâk'* [*part*, and *take*]: to share in common with others; to participate; to share; to be admitted to. **PARTA'KING**, imp. **PARTOOK'**, pt. *-tâk'*, did partake. **PARTAKEN**, pp. *pâr-tâ'kn*. **PARTA'KER**, n. *-kër*, one who partakes; a sharer; an accomplice; an associate.

**PARTANNA**, *pâr-tân'nâ*: town of Sicily, province of Trapani, 36 m. s.w. of Palermo. Pop. 13,000.

**PARTERRE**, n. *pâr-târ* [F. *parterre*, a flower-garden—from *par*, on; *terre*, the ground: L. *per*, along; *terra*, the ground]: in gardens laid out in the old French style, the open part in front of the house, in which flower-beds, evergreens, walks, and closely-cut lawn were intermingled according to a regular plan.

**PARTHENIC ACID**, n. *pâr-thên'ÿk äs'ÿd*: in *chem.*, acid found in distilled chamomile water after long keeping. **It forms a crystalline calcium salt.**

## PARTHENOGENESIS.

**PARTHENOGENESIS**, n. *pâr'thē-nō-jěn'ě-sīs* [Gr. *par'thēnos*, a virgin; *gennāō*, I produce; *genēsis*, generation]: generation from unimpregnated ovum; reproduction of plants or animals without the immediate stimulus of the male principle. The term, introduced by Prof. Richard Owen, was extended by him to include reproduction where no ova are present, such as fission, internal cell-division, and budding (see GENERATIONS, ALTERNATION OF). But the etymology implies ovary. *Agamogenesis* (literally, without-marriage reproduction) is a synonym that has come into use, and is preferable as having the Gr. privative-negative *a*; it does not imply parent, in the ordinary sense. However, in the light of philosophical biology, it matters little; since there is a fundamental likeness in all reproduction, whether in lower or higher forms, and in animals or plants. In all, it is the separation of a part to constitute a new individual. In the lowest, the unicellular organisms, there is a splitting (fission) of one into two or more individuals, or an internal breaking up into many. A little higher, the sponges are hermaphroditic and produce eggs. Next higher, in hydrozoa, separate sexes begin to appear; but there is added the process of external budding, which, if internal and not dependent on fertilization, is regarded as parthenogenesis. Many animals, all the way up to crustacea, can reproduce lost parts by a kind of budding. In all reproduction there is multiplication of cells at some point, and specialization of one or more. Ovulation, even in its highest viviparous result, begins with development of a cell; an egg, indeed, is a typical cell—a mass of protoplasm with a nucleus or germinative vesicle and a nucleolus or germinative spot; and its development begins in segmentation, like the cell-division of the lowest protozoan. In higher forms of reproduction, it has been suggested that all the cells of the organism become so specialized that none have the general properties of a cell capable of spontaneously reproducing the organism; and so there needs to be one or more cells set apart for this purpose in a receptacle or ovary; and the high grade of the organism requires that this cell be re-enforced for its work. Kaspar Wolff thought that the male element may simply furnish a special nutriment, analogous to that which determines one egg to be a queen bee, another a neuter. But, in plants, certainly, there is little absorption from the pollen by the ovule; moreover, the male element in the higher animals has the mysterious function of determining individual resemblances of child to father. In brief, reproduction does not depend on this element except in the higher organisms, and there it adds new phenomena. The ovum is essentially an internal bud, as in cases of internal gemmation, or at least comparable to the 'apical growing cell' in plants; but ordinarily it needs re-enforcement. In the case of plant-lice, whose ten summer generations may be born viviparously, without the intervention of a male, it has been

## PARTHENON—PARTHENOPEAN REPUBLIC

questioned whether the succession of wingless forms are neuters or females or hermaphrodites, and whether they proceed from internal buds or from pseud-ova. Drone or male bees are believed, from some experiments, to be born of unfertilized eggs. In the case of *alternation of generations* (see GENERATIONS, ALTERNATION OF) so different as to be mistaken for different species, genera, or classes, the question what constitutes an individual confuses the subject. It is asserted that all between egg and egg is one individual—that the little, fixed, moss-like or tube-like form and all the large budded jelly-fish that it throws off to swim away and produce eggs, are one individual. If this extreme view be denied, it becomes an instance of agamogenesis. So, also, in some Trematode worms: the egg produces a ciliate 'larva;' inside of this is produced a 'parent-nurse' of a different form, at length set free; inside of this are developed a number of 'nurses' of still another shape, both the second and third forms from egg-like balls; a 'nurse,' after forcing itself into the body of its host, e.g., a snail, is encysted; the snail is eaten by some animal, in whom the encysted 'pupa' hatches out into a fourth and differently shaped locomotive creature, called 'adult.' However it be, asexual reproduction in the more complex classes, is in almost all instances supplementary to the other mode; in some, as in plant-lice, it greatly multiplies a race otherwise in danger of extinction; but the process is an exhaustive one of virtual self-division, if indefinitely continued, as remarked by Quatrefages. In many of the lowest organisms there is occasional conjugation, with no sign of sex, but only a coalescence of nuclei.—See REPRODUCTION.—For many remarkable facts relative to P. in insects, see Owen's *Comparative Anatomy and Physiology of the Invertebrates*; Siebold's two works on the subject; F. M. Balfour's *Comparative Embryology*; and *Nature*, XXII.

PARTHENON, n. *pâr'thē-nōn*: the temple of Minerva in the Acropolis of Athens: one of the most celebrated of the Greek temples, and usually regarded as the most perfect specimen of Greek architecture. Many of the sculptures have been taken to England, and are now in the British Museum. See GRECIAN ARCHITECTURE.

PARTHENOPE, n. *pâr-thēn'ō-pē* [L. and Gr. *Parthenōpē*, one of the Sirens]: in *anc. myth.*, one of the Sirens, who threw herself into the sea because she was unable to beguile Ulysses by her songs: a genus of decapodous crustaceans found in the Indian Ocean: one of the latest discovered of the smaller planets.

PARTHENOPEAN REPUBLIC, *pâr-thēn-ō-pē'an* [from *Parthenope*, the oldest name of the city of Naples]: the name given to the state into which the kingdom of Naples was transformed by the French republicans, 1799, Jan. 23, and which lasted only till the following June, when the invading army was forced to retreat.

## PARTHIA.

**PARTHIA**, *pâr'thî-â*: anciently a country of w. Asia, at the s.e. end of the Caspian Sea, from which it was separated by a narrow strip, known as Hyrcania. P. now forms the n. portion of the province of Khorassan, and is almost wholly mountainous. Its rivers are merely mountain torrents supplied by the melting snow on the Elburz range during winter and spring, and mostly dry in summer and autumn.

The original inhabitants are believed to have been of Scythian race, as shown by their language as well as by their manners, and to belong to the great Indo-Germanic family. If this be the case, as is very probable, the term Parthian, from its analogy to the Scythian word *parthe*, banished, seems to indicate that they were a tribe who had been driven to P. out of Scythia (i.e., central Asia). The Parthians, during the time of the Roman Republic, were distinguished by primitive simplicity of life and extreme bravery, though given to bacchanalian and voluptuous pleasures. They neglected agriculture and commerce, devoting their whole time to predatory expeditions and warfare. They fought on horseback, and after a peculiar fashion. Being armed solely with bows and arrows, they were rendered defenseless after the first discharge; and, to gain time for adjusting a second arrow to the bow, turned their horses, and retired, as if in full flight, but an enemy incautiously pursuing, was immediately assailed by a second flight of arrows; a second pretended flight followed, and the conflict was thus carried on till the Parthians gained the victory, or exhausted their quivers. They generally discharged their arrows backward, holding the bow behind the shoulder; a mode of attack more dangerous to a pursuing enemy than to one in order of battle. The Parthians appear in history first as subject to the great Persian Empire. After the death of Alexander the Great, P. formed part of the Syrian kingdom, but revolted under Antiochus II., and constituted itself into an independent kingdom under the *Arsacidæ* (see **ARSACES**), B.C. 250, a race of kings who exercised the most completely despotic authority ever known, treating their subjects as the vilest of slaves; yet so accustomed did the Parthians become to this odious rule, that some of the later monarchs, who had received a Roman education, and after their accession treated their subjects with ordinary justice and humanity, were completely despised. The capital of the Parthian monarchy was Hecatompylos ('city of the hundred gates'), now Damgan. The Parthian dominion rapidly extended to the Euphrates on the w. and the Indus on the e., and became a most powerful and flourishing empire: Seleucia, Ctesiphon—capital of the Persian emperors of the Sassanidæ—and other celebrated cities date their rise from this period, and soon eclipsed, in size and splendor, the ancient Hecatompylos. In spite of repeated attacks by the Romans, the Parthians maintained their independence (see **CRASSUS**); and though Trajan,

## PARTHIAN ARROW—PARTICIPATE.

A.D. 115-116, seized certain portions of the country, the Romans were soon compelled to abandon them. In 214, during the reign of Artabanus IV., the last of the Arsacidæ, a revolt, headed by Ardshir, son of Babegan, broke out in Persia, and the Parthian monarch, beaten in three engagements, lost his throne and life, while the victor substituted the Persian dynasty of the SASSANIDÆ (q.v.) for that of the Arsacidæ. Some scions of the Parthian royal family continued for several centuries to rule the mountainous district of Armenia, under the protection of the Romans, and made frequent descents upon Assyria and Babylonia; but their history is obscure and unimportant.

PARTHIAN ARROW, *pâr'thî-ăn*: a shaft aimed at an adversary while pretending to fly from or avoid him; a figure derived from the habit of the ancient Parthians in war.

PARTIAL, a. *pâr'shâl* [F. *partial*, partial—from mid. L. *partiâlis*—from L. *partem*, a part]: inclined to favor one party in a cause, or one side of a question, more than another, irrespective of principle or justice; unduly biased or prejudiced: not general or universal: in *familiar language*, inclined more strongly toward one thing than another: in *bot.*, applied to a subordinate part in some general arrangement. PAR'TIALLY, ad. *-lî*, in a partial manner; in part; not totally. PAR'TIAL'ITY, n. *-shî-âl'î-tî*, inclination to one party or side more than to another; an undue bias of mind; special fondness or inclination for. PAR'TIALIST, n. *-shâl-îst*, one holding that the atonement affects the elect only. PARTIALISE, v. *pâr'shâl-îz*, in *OE.*, to make partial. PARTIAL LOSS, in the *law of marine insurance*, a loss not total; in which case the insurer is not entitled to abandon the remains of the ship or cargo and then claim the entire insurance money; but is bound to keep his ship or goods, and to claim only in proportion to his actual loss or damage.

PARTIBUS: see IN PARTIBUS.

PARTICIPATE, v. *pâr-tîs'î-pât* [L. *participâtus*, made partaker of—from *pars* or *partem*, a part; *capio*, I take: It. *participare*: F. *participer*]: to share; to have a share in common with others; to receive a part of. PARTIC'IPATING, imp. PARTIC'IPATED, pp. PARTIC'IPATOR, n. *-têr*, one who partakes with another. PARTIC'IPA'TION, n. *-pâ'shûn* [F.—L.]: state of sharing in common with others; the act or state of having a part of something; a division into shares. PARTIC'IPATIVE, a. *-tîv*, able or tending to participate. PARTIC'IPATIVELY, ad. *-lî*. PARTIC'IPANT, n. *-î-pânt* [F.]: one who partakes or shares.

## PARTICIPLE—PARTICK.

**PARTICIPLE**, n. *pâr'tî-sî-pl* [F. *participe*, a participle—from L. *particip'ium*, a participle—from *pars* or *partem*, a part; *capio*, I take: It. *participio*]: in *gram.*, one of a class of words of the nature partly of a verb and partly of an adjective. **PAR'TICIP'IAL**, a. *-sîp'î-âl*, having the nature and use of a participle; formed from a participle. **PAR'TICIP'IALLY**, ad. *-lî*.—The *Participle*, classed by some grammarians as a distinct part of speech, is classed more commonly as a part of the conjugation of the verb. There are in English two participles, one in *ing*, called usually the present, but properly the imperfect, because it expresses continued, unfinished action, e.g., *loving, writing*; and the other expressing past action, and ending either in *ed* (*t*) or in *en*, e.g., *loved, written*. In Ang.-Sax. and Old Eng., the imperfect P. ended in *and*, e.g., *haband* (having), corresponding to the modern Ger. *habend*, Gr. *echont*(os), Lat. *habent*(is). In the sentence, 'He is *writing* a letter,' *writing* is the imperfect participle; in 'the *writing* of the letter occupies him,' or '*writing* is a difficult art,' it is a substantive, and had a different origin. In the latter case, *-ing* corresponds to the Ang.-Sax. termination *-ung*, used in forming substantives from a large class of verbs; thus, Ang.-Sax. *halgung* (hallowing) is equivalent in meaning and in etymology to Lat. *consecratio*; similarly, modern Ger. *Vernichtung*, annihilation, from *vernichten*, to annihilate. Such a phrase as, 'while the letter is writing,' seems to be a shortened form of the now antiquated, 'is a-writing,' which was originally, 'is in writing.' Although this mode of expression is liable in some cases to ambiguity, many authorities deem it terser and more idiomatic than the circumlocution of, 'is being written,' which is often substituted for it: the preference between the two has been much disputed. The verbal substantive in *-ing* is often exactly equivalent to the infinitive; thus, '*standing* long in one position is painful' = '*to stand*,' etc. It has this advantage, that while it can be construed as a noun (e.g., with a possessive case), it can retain at the same time the usual adjuncts of a verb; as, 'What are we to infer from the king's dismissing his minister?' The use of this form contributes not a little to the peculiar brevity and strength of the English language.

**PARTICK**, *pâr'tîk*: town of Scotland, county of Lanark, prettily situated, chiefly on rising ground on the Kelvin, immediately above its junction with the Clyde, about three m. w.n.w. of the Cross of Glasgow, of which city it now forms a suburb. Nine-tenths of the workmen of P. are engaged in ship-building; and there are numerous ship-building yards, flour-mills, cotton factories, and bleach-fields. A large proportion of the inhabitants are engaged in business in Glasgow, and for their accommodation extensive ranges of handsome villas have been built here. Pop. (1851) 3,131; (1861) 8,183; (1871) 17,707; (1881) 27,410; (1891) 36,538.

## PARTICLE—PARTITION.

**PARTICLE**, n. *pâr'tî-kl* [F. *particule*—from L. *particula*, a small part—from *pars*, a part: It. *particula*]: one of the minutest parts or atoms into which matter can be mechanically divided; a very small portion or part; the component parts or granules of all solid substances; in *gram.*, a word unvaried by inflection; a small connecting word.

**PARTICULAR**, a. *pâr-tîk'û-lér* [F. *particulier*—from mid. L. *particulāris*, concerning a part—from L. *particula*, a small part (see **PARTICLE**)]: not general; individual; distinctive; odd; having something that distinguishes from others, used in the sense of contempt; nice; attentive to things single or distinct; exact; minute: N. a single instance; a single point: PLU. details. **PARTICULARLY**, ad. *-lî*, distinctly; in an extraordinary degree. **PARTICULARITY**, n. *-lār'î-tî* [F. *particularité*]: the quality of being particular; distinctiveness; peculiarity; individual characteristic; minuteness in detail. **IN PARTICULAR**, especially; distinctly. **PARTICULARIZE**, v. *-lér-îz*, to specify singly and distinctly; to enumerate in particulars or detail; to be attentive to single things. **PARTICULARIZING**, imp. entering into particulars. **PARTICULARIZED**, pp. *-îzd*. **PARTICULARIZA'TION**, n. *-î-zā'shūn*, the act of particularizing.—**SYN.** of 'particular, a.': distinct; peculiar; single; one; fastidious; appropriate; circumstantial; individual; special; especial; respective; specific; precise; critical.

**PARTING**: see under **PART**.

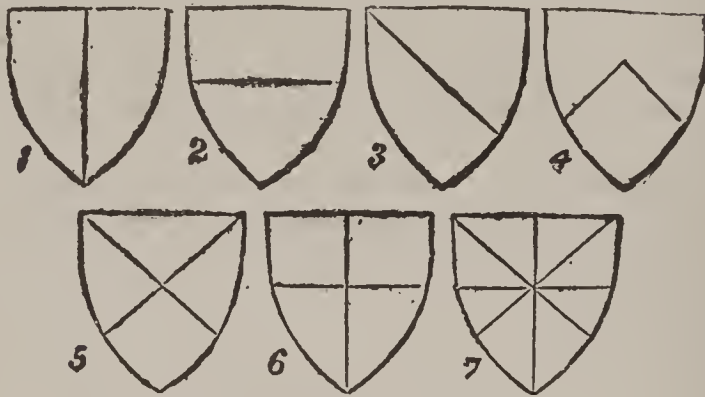
**PARTINICO, SALA DI, sâ'lâ dē pâr-tē'nē-kō**: post-town of Sicily, the province of Palermo, 19 m. s.w. of the city of Palermo, at the foot of a grand precipice of red limestone. The plain in the vicinity is of surpassing fertility; corn, wine, oil, fruit, and sumach are produced in rich abundance; and linen and woollen goods are manufactured. Scattered vestiges of ancient habitations are still seen on the summit of the height above the town, and are said to be the ruins of the ancient *Parthenicum* mentioned in the *Itinerary* of Antoninus, and there only.

**PARTITE**, a. *pâr'tî-t*, or **PART'ED**, a. [L. *partitus*, divided or shared]: in *bot.*, divided to near the base, the divisions being called *partitions*.

**PARTITION**, n. *pâr-tîsh'ūn* [F. *partition*—from L. *partitiōnem*, a parting, a partition—from *partio*, I part I, divide—from *pars*, a part]: division; separation; that by which things are separated; a separate part: in *music*, called also **PARTITURA** (see **SCORE**): V. to divide into distinct parts; to separate by a partition. **PARTITIONING**, imp. **PARTITIONED**, pp. *-ūnd*. **PARTITIVE**, a. *pâr-tî-tîv*, distributive; denoting a part: N. in *gram.*, a word expressing partition, or denoting a part; a distributive. **PAR'TITIVELY**, ad. *-lî*. **PARTITION LINES**, in *heraldry*, lines dividing the shield in directions corresponding to the ordinaries. According to the direction of the parti-

## PARTITION—PARTIZAN.

tion lines, a shield is said to be party or parted per fess, per pale, per bend, per chevron, per saltire: a shield



Partition Lines in Heraldry.

divided by lines in the direction of a cross, is said to be quartered; and a shield parted at once per cross and per saltire, is said to be Gironné (q. v.) of eight. The partition lines are not always plain; they may be engrailed, invected, embattled, wavy, nebuly, indented, dancetté or raguly: see separate titles.

**PARTITION**, in Building: thin interior wall dividing one apartment from another; usually of brickwork about  $4\frac{1}{2}$  or 9 inches thick, or of timber with standards about  $4\frac{1}{2}$  inches thick covered with lath and plaster. Wooden partitions are used when there is no sufficient support for brick, stone, or iron. When wooden partitions have to support much weight, they ought to be constructed in the form of a Truss (q. v.).

**PARTITION**, in Law: division of an estate between two or more joint owners; strictly, such division of real estate, as lands, hereditaments, and tenements, but less properly, division of goods and chattels between coparceners. The P. is *voluntary* when made by mutual consent of the parties in interest, and then each conveys or releases to each the share that each is to hold. The P. is *compulsory* when made by a court without the consent of one or more of the persons interested: in that case the P. is effected by the judgment of the court and by the delivering up of possession in accordance therewith. Courts of equity have jurisdiction in P. cases where the law affords no adequate remedy, e. g., where the alleged titles are equitable only, or where the necessity is involved of one coparcener's making to another or to others compensation for the purpose of equalizing the partition.

**PARTIZAN**, or **PARTISAN**, n. *pâr'tî-zăn* [OF. *pertuisane*, a partizan or leading staff: It. *partigiana*, a weapon like a halberd: mid. L. *partesana*: comp. O. H. G. *partâ*, a battle-ax—connected with **PARTIZAN** 2—comp. also *halberd*]: a kind of halberd: a pike or *truncheon*; a marshal's *baton*.



## PARTIZAN—PARTNERSHIP.

PARTIZAN, or PARTISAN, n. *pâr' tî-zăn* [F. *partisan*, a partner, a partizan—from *parti*, a party, a faction: It. *partigiano*, a partizan: comp. L. *partiri*, to divide, to part]: adherent to a party or faction; one devotedly and violently attached to a party or interest: in *milit.*, light troops engaged in desultory warfare, or the officer who leads them; such troops harass the enemy by cutting off stragglers, interrupting supplies, etc.: ADJ. pertaining to a party or faction; biassed in favor of a party or interest. PAR'TIZANSHIP, n., or PAR'TISANSHIP, *-ship*, state of being a partizan; feeling or conduct appropriate to a partizan; devotion to party.

PARTNER, n. *pârt'nér* [prov. F. *partener*, to partake: OF. *parcener* and *parsonnier*, a partaker, a partner—from L. *pars*, a part]: one associated with another or others in business pursuits; sharer; associate; one who dances with another; a husband or wife: PLU. heavy framework fitted on the deck of a ship to receive a mast, a pump, etc.: V. to join; to associate with. PART'NERSHIP, n. joint or common interest or property; union of two or more in the same profession or trade (see below).

PART'NERSHIP, in Law: union of two or more individuals acting under a contract, whereby they mutually contribute property or labor for making profits jointly. When a P. is confined to a particular transaction or speculation, it is called, usually, a joint-adventure, and the parties are joint-adventurers. The usual criterion by which a P. is ascertained to exist, as distinguished from other arrangements, is that there is a community of profit; it is not essential that both should suffer losses equally or proportionably, for one partner may stipulate that he shall not be liable to loss. This stipulation is binding between the partners, but does not prevent the partners all from being liable to third parties. So one partner may contribute all the capital or all the labor. A dormant partner is one whose name does not generally appear to the world as a partner, but who nevertheless is to all intents and purposes a partner, with rights and liabilities equal to the rest. In order to constitute that kind of community of profit which is the chief element in P., it is necessary that the partner share in the profits as a *partner*; for, in many cases, clerks, servants, or agents receive a commission or remuneration proportioned to profits, and yet are not partners, for this is merely one mode of ascertaining the salary which they are to receive. In all such cases, therefore, the distinction as to whether there is a P. or not turns on the consideration whether the alleged partner receives, as such, a share of the profits, or receives merely a salary proportioned to profits without having a specific interest in the firm. The contract of P. may be entered into either by word of mouth or in writing. If no specified term be agreed upon, it is a P. at will, and may be dissolved by either of the parties at pleasure. Sometimes, also, a court of equity will inter-

## PARTNERSHIP.

tere to dissolve the P. before the time appointed; but this only happens when some unforeseen and urgent reason exists, as that one of the partners has become a lunatic, or has proved grossly dishonest, or grossly careless and wasteful in the administration of the P., or the object of the partnership cannot be carried out. Mere differences of opinion on minor matters are no ground for seeking a dissolution. The partners may validly make any arrangements between themselves that they think proper, provided they are not void as against the statutes or the general principles of the law, even though they be in conflict with the ordinary rules of P., but if these are unusual and special stipulations, there is no certainty of securing adherence to them without a formal deed or indenture of P. being executed. Thus, it is common to stipulate as to the capital each is to contribute, and as to the proportion of profits each is to receive, as to what is to be done in case of the death of a partner, etc. Unless a stipulation is made to the contrary, the rule is, that the death of one of the partners dissolves the P.: so does his bankruptcy. It is a rule also that no new partner can be introduced without the consent of the rest. As against third parties, whatever may be the secret arrangements between members of a firm, the rule is, that any partner can bind the firm in all matters which are within the scope of the P., each being by the nature of the contract made the agent of all the rest for business purposes. Thus, any one may accept a bill in the name of the firm, provided that be one of the modes of doing business. It is, however, to be borne in mind, that the firm is bound by one of the partners in those matters only which are strictly within the proper business of the firm—an important qualification of the general power. Within the above limits, each partner can bind his copartners, however imprudent or foolish his act; since it is one of the implied conditions, that all have full confidence in each other. It follows from this principle, that the firm is liable for the dealings of each partner on its behalf within the scope of the P., and each is liable to the full extent for all the debts of the firm; in short, each is liable to his last dollar for the solvency of the firm. Hence, it is often of importance for a partner, on leaving the firm, to know how to terminate this liability. The rule is, that as regards all strangers, notice fairly given in the public newspapers is sufficient: but as between the firm and those who have had dealings with it, the notice in the newspapers is of no use, unless it can be proved that the party had actual notice given to him—and hence a circular notice sent to customers announcing the fact of retirement, is the only course effectual.

The practice of individuals entering into large associations, now called joint-stock companies, which were originally only extended partnerships, has led to separate statutes as to these: see JOINT-STOCK COMPANIES.

A person who holds himself out to be a partner in a

## PARTON—PARTOOK.

firm, or who suffers his name to stand before the public as the name of a partner, is liable as a partner; and his liability rests, not on the ground of any transaction, actual or presumptive, between him and the real partners, but on the ground of public policy, with a view to the prevention of frauds on creditors. The lending of his name may be express or tacit: by permission to the firm to use his name, or by neglecting to forbid the use of it. Proof of his permission, connivance, or guilty negligence would be his permitting his name to be coupled with those of the real partners on a sign, on bill-heads, or the like, or his suffering his agents to do acts sufficient to lead others to consider him a partner. A *special* partner is liable to the extent of his contribution to the firm's capital: in many of the states the laws now recognize limited partnerships in which the liability of all parties is limited.

PARTON, *pár'ton*, JAMES: 1822, Feb. 9—1891, Oct. 17; b. England; author. He came in early childhood to New York; was teacher at White Plains, N. Y., Philadelphia, and New York, and was a writer on the staff of the *Home Journal* for several years. Since 1875 he has lived in Newburyport, Mass. He has published: *Life of Horace Greeley* (1855); *Humorous Poetry of the English Language* (1857); *Life and Times of Aaron Burr* (1857); *General Butler in New Orleans* (1863); *Life and Times of Benjamin Franklin* (1864); *Smoking and Drinking* (1868); *The People's Book of Biography* (1868); *Famous Americans of Recent Times* (1870); *Triumphs of Enterprise, Ingenuity, and Public Spirit* (1871); *Topics of the Time* (1871); *Words of Washington* (1872); *Life of Thomas Jefferson* (1874); *Caricatures in All Times and Lands* (1875); *Life of Voltaire* (1881). Other works are: *Life of John Jacob Astor*, *The French Parnassus*, *Manual for the Instruction of 'Rings,' Railroad and Political*, *How New York City is Governed* (1866), *The Danish Islands*, etc. An astonished critic quotes from his life of Burr to the effect that Burr's greatest fault was his generosity. —SARA PAYSON (WILLIS) (ELDREDGE) P. (pen-name FANNY FERN), his wife (1811, July 7—1872, Oct. 10; b. Portland, Me.); daughter of Nathaniel Willis (q.v.), and sister of Nathaniel P. Willis (q.v.), and widow of Charles H. Eldredge, a banker in Boston. She was married to James P. 1856. Her first collection of newspaper essays was *Fern Leaves* (1853), which had immense sale. This was followed by a second series (1854); *Ruth Hall*; *Rose Clark and Fresh Leaves* (1857); *The Play-Day Book* (1857); *Folly as It Flies* (1868); *Ginger-Snaps* (1870); *Caper-Sauce* (1871). The last two titles well characterize her general vivacious style of writing. See *Fanny Fern: a Memorial Volume*, by James Parton (1873).

PARTOOK: see under PARTAKE.

## PART-OWNER—PARTRIDGE.

**PART-OWNER:** person who owns a thing in common with other persons. The term part-owners is used particularly with regard to persons owning a vessel together, but not as partners. Separate property in the thing which is the subject of part-ownership is acquired by Partition (q.v.). Part-owners cannot encumber or transfer more of the common property than their own shares; they are not agents for one another. The owners of the majority of the shares in a ship may lawfully employ her against the will of the minority, but the admiralty court may compel them to insure the minority against loss: the minority have the same right under the same conditions. Where the part-owners are equally divided as to the employment of the vessel, a court often orders a sale of the common property. The part-owners are bound *in solidum* by the lawful engagements of their duly-constituted agents, i.e., they are liable jointly and individually to make good the undertakings of their agents, when the agents have not transcended the limits of their authority.

**PARTRIDGE**, n. *pâr'trij* [F. *perdrix*—from L. *perdix* or *perdicem*, a partridge: Gr. *perdix*], (*Perdix*): genus of gallinaceous birds, of family *Tetraonidæ*, having a short, strong bill, naked at the base; the upper mandible convex, bent down at the tip; the wings and tail short, the tarsi as well as the toes naked, the tarsi not spurred.—The COMMON P. or GRAY P. (*P. cinerea*), is the most plentiful of all game-birds in Britain, and becomes increasingly plentiful as cultivation is extended, while the range of the moorfowl is restricted. On the continent of Europe, it is abundant in almost all districts suitable to its habits, from Scandinavia to the Mediterranean; and is found also in n. Africa, and in some parts of w. Asia. It varies considerably in size; those found in rich lowlands being generally the largest, about 12½ inches in entire length; while those which inhabit poorer and upland districts are smaller. The female is rather smaller than the male. The upper parts of both are ash-gray, finely varied with brown and black; the male has a deep chestnut crescent-shaped spot on the breast, almost or altogether lacking in the female. A variety called the Mountain P. has the plumage brown. The P. is seldom found far from cultivated land. It feeds on grain and other seeds, insects and their larvæ and pupæ, and the pupæ of ants are generally the food sought at first for the young. The nest is commonly on the ground, among brushwood and long grass, or in fields of clover or grain, and usually contains 12 to 20 eggs. The young run as soon as they are hatched. Both parents show very strong attachment to their young, and great courage in repelling assailants; they have also recourse, like many other birds, to stratagem, to draw off in another direction the most powerful and dangerous enemies, such as dogs; fluttering close before them as if broken-winged, while the brood escape. Until the end of autumn, the parent birds and their brood

## PARTRIDGE.

keep together in a *covey*; late in the season, several coveys often unite into a *pack*, when it becomes much more difficult for the sportsman to approach them. The flight of the P. is strong and rapid for a short distance, but it does not seem capable of long-sustained flight. The eggs of partridges are often hatched, and the young birds reared, by the domestic hen, the chief requisite being a plentiful supply of ants when the birds are very young. Partridges thus reared become very tame, but they seldom breed in the aviary.—The RED-LEGGED P. (*P. rufus*, or *Caccabis rufus*, the genus or sub-genus *Caccabis* being distinguished by a rudimentary blunt spur on the tarsi) is native of s. Europe and of the Channel Islands, and is now plentiful in parts of England, particularly Norfolk and Suffolk, into which it has been introduced. It is rather larger than the common P., stronger on the wing and less easily approached by the sportsman: it is less esteemed for the table. The upper parts are of reddish-ash color; the throat and cheeks white, bounded by a collar of black, which expands in black spots on the breast; and the sides exhibit bars of black. The plumage is smooth.—Two other species, nearly allied to this, are found in some southern parts of Europe. India has a number of species. The habits of all the species much resemble those of the Common Partridge.—The name P. is sometimes loosely extended to include the species of *Ortyx* (see VIRGINIAN QUAIL), though it seems undesirable to have two names for the same bird; and in S. America it is sometimes given to the Tinamous. As to pheasants, they are of another family, not belonging at all to the new world.

The term 'Partridge' originally belonged to the gray P. (*Perdix cinerea*) of Gr. Brit., but was extended to all the sub-family PERDICINÆ, exclusively of the old world, and including quails—the true quail being the migratory one of s. Europe (*Coturnix dactylisonans*), which has been introduced somewhat into this country. The term P., however, is admissible (especially if qualified as Amer. P.) as applied to the sub-family ODONTOPIORINÆ, exclusively of the new world, and distinguished by a number of characters, notably by notched mandible—hence the name of the sub-family, meaning tooth-bearing. It includes the Bob-white and the plumed and other species of the s.w. United States. The Bob-white is rightly called P. in the middle and s. states (but there the ruffed grouse is improperly called pheasant, just as the ruffed grouse and spruce grouse are improperly called P. in the n. states.) The sub-family TETRAONINÆ, grouse, are easily distinguished by feathered shank—the exception being the ruffed grouse (*Bonasa umbella*).

## PARTRIDGE—PARTRIDGE-WOOD.

PARTRIDGE, GEORGE: statesman: 1740, Feb. 8—1828, July 7; b. Duxbury, Mass. He was educated at Harvard 1759-62; studied theology, and became a teacher at Kingston, Mass. He was a delegate to the provincial cong., 1774-5, a member of the Mass. house of representatives till 1779, then a delegate to the continental congress, and continuously in congress till 1785, except the cong. which met at Princeton, N. J., 1783. He sat in the U. S. congress from its opening till 1790, when he resigned. A large part of his estate he left for charitable and religious purposes.

PARTRIDGE BERRY: see GAULTHERIA.

PARTRIDGE PIGEON (*Geophaps*): Australian genus of *Columbidae*, approaching more than most of the pigeons, in character and habits, to the true gallinaceous birds, particularly partridges. Their plumage is beautiful, and generally with bronze tinge and lustre on the wings, whence their name sometimes of Bronze-wings. There are several species. They live mostly on the ground, and rise with a whirring noise, like the pheasant, when disturbed. They are highly esteemed for the table.—*Geotrygon montana*, species of another genus of *Columbidae*, bears the name PARTRIDGE DOVE in the W. Indies. It also seeks its food chiefly on the ground, though it frequents well-wooded districts.

PARTRIDGES, in Artillery: very large bombards formerly in use at sieges and in defensive works. They are mentioned in Froissart.

PARTRIDGE-WOOD: very pretty hard-wood from the W. Indies and Brazil; usually of reddish color, in various shade from light to dark, the shades mingled in thin streaks; but in some choice sorts they are curled upon one another, resembling the feathers of the partridge, whence its name. One variety occurs in which the colors are remarkably bright, and it is consequently called Pheasant-wood. In Brazil, this beautiful wood is so plentiful that it is employed in ship-building, and it is said to be used in British navy-yards under the name Cabbage-wood, but this is doubtful: many woods are known as P.-W., and several as cabbage-wood. Among the Brazilians, it is called 'Angelim,' and they describe four sorts—*Angelim de pedra* (Stone Angelim), *A. vermelho* (Red Angelim), *A. amargoso* (Bitter Angelim), and *A. varzea* (Cultivated Angelim). Its chief use in other countries is for cabinet-work, Tunbridge-ware, parasol-sticks, fans, and other small matters for which its beauty recommends it. It is said to be yielded by the leguminous tree (*Andira inermis*), found not only in the Brazils, but in other parts of S. America and in the W. Indies.

## PARTS OF SPEECH—PARTY-WALL.

**PARTS OF SPEECH:** the several kinds or classes into which the words of a language are divided. There is nothing in the outward form of words that would enable us to divide them into classes. The distinction lies in the *offices* that the several words perform in a Sentence (q.v.). All words performing the same office in sentences belong to the same class. The essential parts of speech are the Noun, Adjective, Pronoun, Verb, Adverb, Preposition, Conjunction, Interjection (see these several heads). The Articles (q.v.) are not distinct parts of speech, being essentially pronouns. Interjections (q.v.) are by some writers considered as hardly belonging to articulate speech. To name the class or part of speech to which each word of a sentence belongs is called to *parse* it.

**PARTURE:** OE. for DEPARTURE.

**PARTURITION**, n. *pâr'tū-rīsh'ūn* [L. *parturitiōnem*—from *partu'riō*, I bring forth]: the act of bringing forth, or of being delivered of young (see MIDWIFERY). **PARTURIENT**, a. *pâr-tū'rī-ēnt* [L. *parturien'tem*]: bringing forth or about to bring forth young.

**PARTY**, n. *pâr'tī* [F. *partie*, a part, a share; *parti*, a party or faction—from *partir*, to divide—from L. *partīri*, to part, to divide: It. *partita*, a share, a division]: a number of persons united in opinion or design in opposition to others in the same community or nation; a faction; one concerned or interested in an affair; one of two litigants; a particular person—but improperly so applied; a cause or a side; a select company or assembly; a small detachment of troops drawn from the main body: in *her.* (see PARTITION LINES, under PARTITION): **ADJ.** that concerns not the whole; arising from party; in *her.*, used with reference to the division of a field or charge. **PARTYISM**, n. *pâr'tī-izm*, devotion to party; party-spirit. **PARTY-COLORED**, or **PARTI-COLORED**, having divers colors. **PARTY-FENCE**, a fence between the lands of separate proprietors. **PARTY-JURY**, a jury consisting of half natives and half foreigners. **PARTY-MAN**, one holding violent party principles; a factious man. **PARTY-SPIRIT**, the spirit or animus that distinguishes a party. **PARTY-VERDICT**, a joint verdict. **PARTY-WALL**, wall separating two houses (see below).—**SYN.** of 'party, n.': side; sect; litigant; cause; assembly; meeting; person; detachment; cabal; conspiracy; combination.

**PARTY-WALL:** wall dividing two houses or tenements, and which is, in a certain sense, one and indivisible, though the property of two or more parties. The question as to who is the owner of any particular part of the P.-W. is solved by ascertaining who is the owner of the soil on which it is built. In the absence of evidence to the contrary, it is presumed that half of the soil belongs to the owner on one side, and the other half to the owner of the other side; and unless the wall has stood 20 years and more, each owner can do what he likes with his own half, and can pare it away if he likes.

## PARUSIA—PASCAL.

But in general, mutual interest prevents each party from resorting to his strict legal rights. A practice exists for one who builds a house adjoining the wall of a neighbor, to pay for half the expense of the wall.

PARUSIA, n. *pa-rū'zī-a* [Gr. *parousia*, presence—from *pareimi*, pp. *parōn*, to be present—*para*, beside; *eimi*, to be]: in *rhet.*, a figure of speech by which the present tense is used instead of the past or future, and in a vivid or animated narration of past, or prediction of future, events.

PARVENU, n. *pâr'vĕ-nô'* [F. *parvenu*, an upstart—from *parvenir*, to attain to, to succeed—from L. *pervenīrĕ*, to arrive—from *per*, through; *venīrĕ*, to come]: an upstart; one newly risen into notice or power.

PARVIS, or PARVISE, n. *pâr'vīs* [OF. *parvis*, the porch of a church—from mid. L. *paravīsus* for *paradīsus*, the church porch, the paradise]: in *OE.*, the church porch; the room over a church porch, for a school; sometimes an open space in front of a church door. *Note.*—When the old mystery-plays were exhibited in the churchyard, the porch represented *paradise*, hence the name; the word also meant, 'an altar; a berth in a ship,' etc.—see Skeat.

PAS, n. *pâ* [F. *pas*, a step—from It. *passo*; L. *passus*, a step]: a step; in *OE.*, precedence.

PASADENA, *pās'ă-dĕ'-nă*, city, Los Angeles co., Cal.; on the Los Angeles terminal and S. Cal. r.r.s. P. has become important as a center of the orange and fruit industry, and as a health resort. Pop. (estimated 1896) 15,000.

PASCAGOULA, *pās-ka-gô'la*: river, and bay at its mouth, in Miss. The river, formed by the junction of the Leaf, the Chickasawha, with numerous branches, drains the s.e. portion of the state, and flows into Mississippi Sound through two mouths which form the bay. It is navigable 100 m. through a sandy region of pine forests, supplying turpentine. The villages on the bay are summer resorts for residents of Mobile and New Orleans; and on the shores at night are heard sounds like the Æolian harp, supposed to be caused by some kind of shell-fish.

PASCAL, *pās'kal*, F. *pâs-kâl'*, BLAISE: one of the most distinguished philosophers and scholars of the 17th c.: 1623, June 19—1662, Aug. 19; b. Clermont, in Auvergne, France. His father, Étienne P., was pres. of the Cour des Aides at Clermont. His mother, Antoinette Bezon, died while he was little beyond infancy. He had two sisters—the elder, Gilberte, Madame Perier, afterward his biographer; the younger, Jacqueline, who became a nun of Port Royal, under the celebrated Mère Angélique, sister of Antoine Arnauld. From childhood, Blaise gave evidence of extraordinary abilities; and when he reached his 3th year, his father resigned his office at Clermont, and came to Paris, personally to direct the boy's education. For the purpose of concentrating all the boy's efforts on languages, his father kept out of his reach all



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books treating of mathematics, for which he had evinced a taste; and it is recorded that the child by his own unaided speculations, drawing the diagrams with charcoal upon the floor, made some progress in geometry. One account represents him as having thus mastered the first 32 propositions of the first book of Euclid's *Elements*—a statement which carries its own refutation. Thenceforward, he was permitted freely to follow the bent of his genius. In his 16th year, he produced a treatise on Conic Sections, which extorted the almost incredulous admiration of Descartes. In his 19th year, he invented a calculating-machine; and turning his attention to the novel questions as to the nature of fluids, which Torricelli's theories had raised, he produced two essays, which, though not published till after his death, have established his reputation as an experimental physicist. His father having accepted an office at Rouen, P. was there brought into intercourse with a distinguished preacher, Abbé Guillebert, member of the Jansenists, a man of great eloquence, a master of ascetic theology; from whom and from other members of the same rigid sect, as well as from the writings of Arnauld, St. Cyran, and Nicole, P.'s mind received a deeply religious turn; and his health having suffered from excessive study, he gave himself up in great measure to retirement and theological reading, and to the practice of asceticism. The death of his father, and his sister Jacqueline's withdrawal to Port Royal, confirmed these habits; and to this period we owe his magnificent though unfinished *Pensées*, which have extorted the admiration even of his unbelieving, therefore unsympathizing, critics. Having fully identified himself with the Jansenist party, he was induced (1655) to take up his residence at Port Royal, though not as one of the famous 'solitaries;' and there he gave himself to religious devotion and asceticism. In the controversy to which the condemnation of Arnauld by the Sorbonne (1655) gave rise, P. took lively interest; and to this controversy he contributed the memorable *Lettres Provinciales*, published under the pseudonym 'Louis de Montalt.' These famous Letters (18, not reckoning the 19th, which is a fragment, and the 20th, which is by Lemaistre) are written, as if to a provincial friend, on the absorbing controversial topic of the day. The first three are given to the vindication of Arnauld, and the demonstration of the identity of his doctrine with that of St. Augustine. But it was to the later letters that the collection owed both its contemporary popularity and its abiding fame. In these P. addresses himself to the casuistry and to the directorial system of Arnauld's great antagonists, the Jesuits; and in a strain of humorous irony which has seldom been surpassed, he holds up to ridicule their imputed laxity of principle on the obligation of restitution, on simony, on probable opinions, on directing the intention, on equivocation and mental reservation, etc. In all this, he professes to produce the authorities of their own authors. Of the extraor-

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dinary ability displayed in these celebrated Letters, no question can be entertained; but the Jesuits and their friends loudly complain of their unfairness, and represent them as in great part the work of a special pleader. The quotations, except those from Escobar, were confessedly supplied by P.'s friends. It is complained that many of the authors cited are not Jesuits at all; that many of the opinions ridiculed and reprobated as opinions of the Jesuit order had been in reality formally repudiated and condemned in the Society; that many of the extracts are garbled and distorted; that it treats as though they had been designed for the pulpit, and as manuals for teaching, works which in reality were meant as only private directions of the judgment of the confessor; and that, in almost all cases, statements, facts, and circumstances are withheld, which would modify, if not entirely remove, their objectionable tendency: see JESUITS. To all which the enemies of the Jesuits reply by arguments intended thoroughly to vindicate Pascal. P. himself entertained no compunctious feeling for the production of these Letters, but even at the approach of death declared his full satisfaction with the work, such as it was. His later years were made very wretched by continued, or at least frequently recurring, hypochondria, under the influence of which he suffered from painful fantasies, which he was unable to control. His strength was completely worn out by these and other infirmities, and, prematurely old, he died in Paris at the early age of 39. His *Pensées sur la Religion, et sur quelques autres Sujets*, being unfinished, were published with suppressions and modifications 1669; but their full value was learned only from the complete ed. published at the instance of Victor Cousin (Paris 1844). As scattered fragments of thought on the vastest themes, the *Pensées* give an impression of vagueness, and raise more questions than they settle. While thus lacking the character of a satisfactorily complete discussion, they are in parts richly suggestive. Of all his works, the *Lettres Provinciales* have been most frequently reprinted. They were translated into Latin in the lifetime of P. by Nicole, under the pseudonym of a German prof., 'Wilhelm Wendroc;' and an ed. in four languages appeared at Cologne 1634.

PASCH, or PASCHE, n. *päsch* [L. and Gr. *Pascha*, the Passover, Easter: Heb. *Pesach*, the feast of the Passover—from *pâsach*, to pass over]: the feast of the Passover; Easter. PASCH EGG, a hard-boiled egg stained or painted, used variously by the young at Easter. *Note.*—EASTER is F. *pâque*; OF. *pasque*: we have prov. Eng. *pask*, and Scot. *pas* or *pase*, names for Easter. The hard dyed, variously colored eggs are in prov. Eng. *paste eggs*, and in Scot. *pase eggs*. The old name PASCH, for the native name EASTER, was and is so applied because Christ arose immediately after the Jewish Passover, on the first day of the week, the Christian Sunday: see EASTER.

## PASCHAL—PAS-DE-CALAIS.

PASCHAL, a. *pās'kāl* [Heb. *Pesach*; Gr. *Pascha*, the Passover—from Heb. *pāsach*, to pass over]: pertaining to the feast of the Passover (q.v.) or to Easter (q.v.). PASCHAL CONTROVERSY (see EASTER). PASCHAL CYCLE, that which fixes the time of Easter. PASCHAL FLOWER, or PASQUE FLOWER, purple flower, named from its flowering about Easter (see below). PASCHAL LAMB, among the *Jews*, the lamb slain and eaten at the Passover.

PAS'CHAL CHRONICLE; known also as *Alexandrinum*, from its supposed compiler, Peter of Alexandria, and as *Fasti Siculi* (from L. *fas*, with acquired meaning history, and *Siculi*, Sicily, whence a copy was brought): compilation of rules for Easter (AS. for Gr. and L. *Pascha*, Passover), and chronology of the world from Adam to A.D. 354, whence the date of the chronicle is inferred; author unknown. It was afterward extended to 620. A later addition was a list of Rom. emperors from Augustus to Constantius Monachus, 1042. It contains faulty but valuable chronological material. An edition with Gr. text and L. translation was edited by L. Dindorf of Bonn 1832.

PAS'CO, or (fully) CERRO DE PASCO, *sěr'rō dā pās'kō*: important mining city in Peru, dept. of Junin, about 14,000 ft. above sea-level; 80 m. n.e. of Lima in direct line, but more than 130 m. by the winding mountain road. It is a collection of huts spread over an area hollowed out and perforated in all directions by silver mines. There is a journal of literature and mining. The Cerro, or 'mountain knot,' of Pasco rises, in Sacshuanata, 16,000 ft. above sea-level. Coal is found. Pop. varies largely, according to the state of the mines; average about 13,000.

PAS-DE-CALAIS, *pâ-dêh-kâ-lā'* (Fr. for Strait of Dover): department in n. France, bounded n. by the dept. of Nord and the Strait of Dover, and w. by the Strait of Dover and the English Channel; 2,540 sq. m., of which 883,300 acres are cultivated, and 236,707 in meadows. The surface is level, except a ridge of hills running from s.e. to n.w., ending in Gris-Nez Cape (q.v.), and forming the watershed between the North Sea and the English Channel. The rivers are short; they are the Scarpe and Lys in the basin belonging to the North Sea, and the Authie and Canche in the basin belonging to the English Channel. The rivers are navigable within the dept., and are connected by canals. The coast-line is 80 m. in length, and the shores are in parts low and sandy; while for several miles on either side of Gris-Nez, cliffs similar to those of Dover front the sea. The climate is mild, but exceedingly inconstant. The soil is very fertile—all the usual cereal and leguminous crops are produced in abundance; and the country is very productive as regards both agriculture and manufactures. Fishing is actively carried on, particularly in the neighborhood of Boulogne. Coal of indifferent quality

## PASENG—PASHA.

is raised, the excellent quarries of the department are worked, and much turf is cut. The industrial establishments are numerous and important, e.g., iron foundries, glass-works, potteries, tanneries, and numerous bleach-works, and mills and factories of various kinds. Boulogne and Calais are the principal harbors. There are six arrondissements—Arras, Béthune, St. Omer, St. Pol, Boulogne, and Montreuil. The capital is Arras.—Pop. of P. (1891) 874,364; (1901) 955,391.

PASENG': see GOAT.

PASEWALK, *pâ-zéh-vâlk*: town of Prussia, govt. of Stettin, 25 m. w.n.w. of the city of Stettin, on the Uker. It contains two churches, two hospitals, and several woolen-cloth and leather factories; and carries on an active general trade. Pop. (1880) 9,469; (1890) 8,247.

PASH, v. *păsh* [Dan. *baske*, to slap: prov. Sw. *paska*, to dabble in water: an imitative word, as *dash* is]: in *OE.*, to dash; to bruise; to smash; to strike. PASH'ING, imp. PASHED, pp. *păst*. Note.—The rough *pash* of Shakespeare is said to mean, a 'furrowed brow'—from Gael. *bathais*, the forehead, pronounced *băsh* or *păsh*—see Gael. Etymology. It is probable that *pash* is another form of *box*, and connected with *baste*—all being onomatopoeic in their origin—see Skeat.

PASHA, or PACHA, n. *pâ'shă* or *pă-shâ'* [Pers. *pasha*—from *pad*, powerful; *shah*, king: Ar. *basha*]: in the *Turkish empire*, the viceroy or governor of a province; title of honor of the chief ministers and officers, civil, and military or naval, of the sultan: the title was anciently given only to princes of the blood. The pashas were formerly distinguished in their rank by one, two, or three horse-tails on a staff carried before them—the visible symbol is now discontinued. Pashas of the highest rank are pashas of three tails, and include, in general, the highest functionaries, civil and military: all pashas of this class have the title vizier. The pashas of two tails are the governors of provinces, generally called by the simple title 'pasha.' The lowest rank of P. is the P. of one tail; the sanjaks, or lowest class of provincial governors, are of this rank. The P. of a province has authority over the military force, the revenue, and the administration of justice. His authority was formerly absolute, but a check has been imposed on him by the appointment of local councils. The P. is in his own person the military leader and administrator of justice for the province under his charge, and holds office during the pleasure of the sultan—a most precarious tenure, as the sultan can at any moment, in the exercise of his despotic power, exile, imprison, or put him to death; and this has frequently been done in cases where the pasha's power has excited the apprehension, or his wealth the avarice, of his royal master. PASHALIC, n. *pă-shâl'ik*, the province or government of a pasha: ADJ. pertaining to a pasha.

## PASIGRAPHY—PASMA.

PASĪGRAPHY, n. *pās-īg'ră-jī* [Gr. *pas*, all; *graphō*, I write]: any system of universal writing; the imaginary universal language, to be spoken and written by all nations.

PASĪPH'ĀË: see MINOS: MINOTAUR.

PASKEVITCH, *pās-kěh'vich*, IVAN FEODOROVITCH, Count of Erivan, Prince of Warsaw: Russian field-marshal: 1782, May 8—1856, Jan. 29; b. Poltava; of a Polish family. He was at first a page to Czar Paul, but entered the army, and served in the campaign in 1805, which was ended by the defeat of Austerlitz; and then against the Turks. He was prominent in the campaign of 1812, and several times defeated the French under Eugène, Ney, and St. Cyr; he was also present at Leipzig and in the conflicts under the walls of Paris. In 1825 he was appointed commander-in-chief against the Persians, whom he completely defeated, conquering Persian Armenia, taking Erivan, and ending the war by the peace of Turkmanshai (q.v.), a peace exceedingly favorable to Russia. In recompense for these services, he was created Count of Erivan, and received a grant of 1,000,000 rubles (\$770,796). In 1828 and 9 he made two campaigns against the Turks in Asia, signalized by the taking of Kars, Erzerum, and other important provinces, and terminated by the treaty of Adrianople 1829. In 1831 P., now field-marshal, was appointed viceroy of Poland, put an end to the revolt within three months after his appointment, and reconstructed the administration on the basis of a complete incorporation with Russia. - Such was the vigor and severity of his rule, that the eventful year 1848 passed without any attempt at revolution. When Russian intervention in Hungary had been resolved upon, P., though now 67 years of age, marched into that country at the head of 200,000 men, and, after a junction with the Austrians, defeated the Hungarians in several battles, and by mere force of numbers crushed out the last spark of insurrection. The 50th anniversary of his military service was celebrated at Warsaw, 1850, with great rejoicings, and on this occasion the sovereigns of Austria and Prussia conferred on him the rank of field-marshal in their respective armies. In 1854 he unwillingly took the command of the Russian army on the Danube; but fortune, which had hitherto invariably smiled upon him, deserted him at Silistria; and after undergoing a succession of sanguinary repulses, and being himself grievously wounded, he withdrew his army, and, resigning the command, retired to Warsaw, where he fell into a profound melancholy, and died.

PASMA, *pās'mâ*: non-official healing-powder, regarded as very serviceable in burns, ulcers, excoriations, etc. It is composed of 30 parts of silica, 12 of magnesia, 6 of alumina, 2 of protoxide of iron, and 50 of starch from the olgra root.

## PASPALUM—PASQUE FLOWER.

PASPALUM, *päs'pa-lüm*: a genus of grasses, with spikes either solitary or variously grouped, one-flowered spikelets, and awnless paleæ. The species are numerous, natives of warm climates.—*P. scrobiculatum* is cultivated as a cereal in India, where it is called Koda. See MILLET. It will grow in very barren soils, and delights in a dry, loose soil. *P. exile* is cultivated in like manner in w. Africa, where it is called Fundi (q.v.) or Fundungi.—Other species are valuable as fodder-grasses. *P. purpureum* is a very important fodder-grass in the coast districts of Peru, during the dry months of Feb. and March. *P. stoloniferum*, also a Peruvian species, has been introduced into France; but is liable to be injured by frosts, and seldom ripens its seeds in the neighborhood of Paris.

PASQUE, n. *päsk* [OF. *pasque*; F. *pâque*, Easter]: feast of Easter: see PASCH.



Pasque Flower (*Anemone pulsatilla*).

PASQUE FLOWER, *päsk* (*Pulsatilla*): genus of plants of nat. order *Ranunculaceæ*, by many botanists still included in *Anemone*, the chief distinguishing characteristic being the long, feathery awns of the fruit. The species are perennial, silky, herbaceous plants, with doubly pinnatifid or doubly trifid leaves, and a simple one-flowered scape. They are narcotic, acrid, and poisonous. The Common P. (*Pulsatilla vulgaris* or *Anemone pulsatilla*) is a native of many parts of Europe. It has widely bell-shaped bluish-purple flowers. Another species, *P.* or *A. pratensis*, native of the continent of

## PASQUIL—PASS.

Europe, has smaller and more perfectly bell-shaped blackish-purple flowers.—These plants emit, when bruised, a pungent smell; and contain, as their principal constituent, a peculiar pungent essential oil, which, in combination with *Anemonic Acid*, forms an acrid and very inflammable substance called *Anemonine*, or *Pulsatilla Camphor*, and sometimes used in medicine. *Pulsatilla* is a favorite medicine of the homeopaths. *Easter Eggs* are colored purple in some places by the petals of the pasque flower.—More acrid than any of the species just named is *Pulsatilla patens*, which occasionally even blisters the skin.

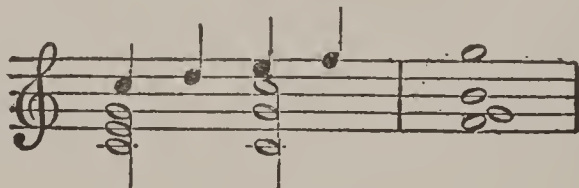
PASQUIL, n. *päs'kwil*: same as PASQUINADE.

PASQUIN, n. *päs'kwîn*, or PASQUINADE, n. *päs'kwîn-ād*: lampoon or satire: V. to lampoon or satirize. PASQUINADING, imp. PASQUINADED, pp.—*Pasquinade* is an anonymous or pseudonymous publication of small size, sometimes printed, sometimes only posted up or circulated in manuscript, and having for its object the defamation of a character, or at least the turning of a person to ridicule. The name is derived from *Pasquino*, a tailor (some say a cobbler, others a barber) remarkable for wit and sarcastic humor, who lived in Rome toward the close of the 15th c., and attracted many to his shop by his sharp and lively sayings. Some time after his death, a mutilated fragment of an ancient statue, considered to represent Menelaus supporting the dead body of Patroclus, was dug up opposite his shop, and placed at the end of the Braschi Palace, near the Piazza Navoni. It was named after the defunct Pasquino, and thus the practice originated of affixing to it placards containing satires and jests relative to the affairs of the day—the pope and the cardinals being favorite victims of the invisible satirists. Until recent years it continued to be the only outlet which the Roman had for his opinions and feelings on public men and affairs. The following are specimens of the mordant style of the Pasquin statue. 'Great sums,' said the satirist one day, in an epigram addressed to Pope Paul III., 'were formerly given to poets for singing; how much will you give me, O Paul, to be silent?'—On the marriage of a young Roman called Cesare to a girl called Roma, the statue gave the following advice: 'Cave, Cæsar, ne tua Roma respublica fiat.' Next day, in another part of the town, the rival statue of Marforio, in the Capitol, bore the reply: 'Cæsar imperat;' to which Pasquin with exquisite malice retorted: 'Ergo coronabitur.'

PASS, n. *päs* [It. *passare*; F. *passer*, to pass, to go over: Ger. *pass*, a passage: L. *passus*, a step or pace]: a narrow passage or entrance; permission or license; an order by which vagrants or paupers are sent to their native place; a free journey-ticket on a railway; a free admission to a place of amusement; a push or thrust in fencing; state or condition: a satisfactory examination gone through,

## PASS.

as by a pupil in a school, before an inspector; a university examination to which no honors are attached: V. to cause to move onward; to move or proceed from one place, state, etc., to another; to go; to utter or pronounce, as an opinion; to neglect or omit; to enact or be enacted; to go through the necessary stages and receive sanction, as a bill in parliament; to determine finally, as a judgment; to thrust, as in fencing; to undergo; to be at an end; to go beyond; to go through; to be generally received; to run or extend; to transfer or be transferred; to vanish; to circulate, as, to *pass* bad money; to admit or allow, as, to *pass* the accounts. PAS'SING, imp.: ADJ. departing; in *OE.*, supremely excellent; eminent: AD. surpassingly; exceedingly: N. the act of going past; the act of carrying through all the regular forms, as a bill through parliament. PASSED, pp. *pâst*. PASSER, n. *pâs'sér*, one who passes. PAS'SABLE, a. *-să-bl*, that may be passed; possible to be passed or travelled through or over; tolerable; allowable; capable of repetition or admission; current. PAS'SABLY, ad. *-blŷ*, tolerably; moderately. PASS'LESS, a. *-lës*, having no passage. PASSER-BY, one who goes by or near. PASSING BELL, bell tolled immediately at a person's death, at or near the moment of the soul's 'passing' from the body: its use in Rom. Cath. countries is to invite the hearers to join in the prayers ordered 'for the dying in their hour of agony,' and which the priest, with his attendants, recites in the death-chamber: see BELL. PASS BOOK, a small book in which credit purchases or credits are entered. PASS CHECK, a ticket of admission to a place of amusement, or for re-entrance. PASS KEY, a key which opens a series of locks, or commonly a latch-key. PASS NOTE, a certificate from an employer that the bearer has legally left his last employment. PASSING NOTE, in *music*, a grace-note; intervening note, or note of transition, used to assist the progression in passing from one chord to another, and not belonging to either chord, e.g., the notes D and F in the upper part of the subjoined example. PASSWORD, in *mil.*, a word used as a signal by



which a friend may be distinguished from a stranger, and allowed to pass. TO PASS AWAY, to die; to spend or waste. TO PASS BY OR OVER, to overlook; to disregard; to excuse or forgive. TO PASS INTO, to blend completely with. TO PASS ON OR UPON, to determine; to give or utter, as an opinion or a sentence. TO PASS OFF, to impose upon. TO PASS OFF OR AWAY, to be dispersed; to vanish. TO PASS ONE'S WORD, to promise; to pledge one's self. TO BRING TO PASS, to cause to happen; to accomplish. TO COME TO PASS, to occur; to happen. MOUNTAIN PASS, a defile or narrow glen cutting a mountain



## PASS—PASSAGE ISLAND.

ain chain. *Note.*—F. *passer* is referred to a mid. L. or factitious L. *passārē*—from *passum*, the supine of *pandērē*, to open, as in *pandērē viam*, to make a way or passage—see Brachet.—*SYN.* of ‘pass, v.’: to run; be lost; move; spend; live through; be over; die; be effected; exist; occur; thrust; strain; percolate; pronounce; vent; transmit; omit; neglect; transgress; transcend; send; in *OE.*, to heed or regard; admit; allow;—of ‘pass, n.’: avenue; strait; passage; road; order; condition; push; thrust.

PASS: v. in *OE.*, for SURPASS.

PASSADE, n. *päs-sād’*, or PASSADO, n. *päs-sā’dō* [F. *passade*, a passing—from It. *passata*; Sp. *pasada*, a passage, a place]: in *fencing*, a thrust; the course of a horse backward and forward on the same spot of ground.

PASSAGE, n. *päs’sāj* [F. *passage*, a passage, a road—from *passer*, to pass—from L. *passus*, a step (see PASS)]: act of passing; a journey; a voyage; time occupied in passing; a way or road; entrance or exit; a corridor in a house or building; an event; an incident; an indefinite part of a book, writing, or discourse; in *music*, a portion of an air or tune; in *OE.*, state of decay. BIRD OF PASSAGE, a bird that passes at certain seasons from one climate or country to another (see BIRDS OF PASSAGE); person who is apt by force of circumstances, or by natural disposition, to change his place of abode frequently; a Bohemian; a wanderer. PASSAGE MONEY, the fare paid for conveyance by sea.—*SYN.* of ‘passage’: travel; course; road; entrance; exit; occurrence; hap; transaction; management; vestibule.

PAS’SAGE, WEST: seaport town on the western shore of the estuary of the river Lee, in county Cork, Ireland, which has risen into importance chiefly as a watering-place, and as the shipping-port and marine suburb of the city of Cork, about 6 m. distant, by the Cork and Passage railway. As the river above P. is not navigable for ships above 400 or 500 tons burden, ships of higher tonnage discharge their cargoes here. It is also a ship-building station. About four-fifths of the people are Rom. Catholics; the rest mainly are Prot. Episcopalians. Pop. about 3,000.—There is another small town, EAST PASSAGE, near the mouth of the Suir, in county Waterford, Ireland.

PAS’SAGE ISL’AND, called also CULEBRA: West Indian island of the Virgin or Passage group, belonging to Spain; lat. 18° 13’ n., long. 65° 17’ w.; seven m. long. It has lost great part of its original forest covering, and has a stunted vegetation. Pop. about 300.—PASSAGE ISLAND is the name also of a low-lying islet off the w. coast of Sumatra, 2° 24’ 30” n. lat.—A small group between Celebes and Sangir is called Passage Islands.—Yet another Passage Island lies on the s. coast of Borneo

## PASSAGLIA—PASSAIC.

PASSAGLIA, *päs-säl'yä*, CARLO: Roman Catholic theologian, famous in connection with the movement for the unity of Italy; born Lucca, 1812, May 2, d. 1887, March 17. While very young, he entered the Jesuit Soc., and soon obtained great distinction in its schools. Appointed prof. of theology in the Roman College, he was eminent alike for learning and for eloquence. During the troublous times of 1849-51 he taught in a Jesuit college in England; but on the re-establishment of the Jesuits in the Roman College, he resumed possession of his chair. During the discussions which preceded the definition of the doctrine of the Immaculate Conception of the blessed Virgin Mary (q.v.), P. produced an elaborate treatise on the doctrine and history of that question, published at the cost of the Roman govt. Soon afterward, however, the dissatisfaction expressed at the unsuitable character and method of his lectures, by the authorities of the order, led to his resignation of the professorship of theology. Still, however, he continued a member of the Soc.; and the pope, who felt a friendship for him, established in the Roman Univ. a special chair of philosophy for P., which he did not long retain. In 1858 or 9 he left the Soc. of the Jesuits, and entered warmly into the discussions as to the temporal power of the pope, in connection with which he undertook a voluntary but fruitless mission to Turin. Having fallen under suspicion in Rome, and his house having been invaded by a domiciliary visit of the police, he withdrew to Turin, where he established a journal, *Il Mediatore*, which appeared till 1866. He was appointed by the king prof. of moral philosophy, and subsequently of theol. in the Univ. of Turin. In 1863 he became a member of the Turin parliament, but his success fell far short of his reputation. He is said to have sought reconciliation with the church, but to have failed to make the required retraction.

P.'s principal works are the treatise on the Immaculate Conception (4 vols. 4to); a treatise (Latin) on the Primacy of St. Peter (8vo, 1850); a scholastic treatise entitled *Commentarius Theologicus de Partitione Divinæ Voluntatis* (8vo, Rome 1851); an apology for the cause of Italian unity, *Pro Causa Italica ad Episcopos Catholicos* (Florence 1861), in which he recommends the church to make peace with the nation; several essays on religious and political subjects, and recently a learned and very detailed Reply to Renan's *Vie de Jésus* (Italian).

PASSAIC, *päs-sä'ik*: city in Acquackanonck township, Passaic co., N. J.; on the Passaic river and the Delaware Lackawanna and Western, the New York Lake Erie and Western, and the Susquehanna and Western railroads; 12 m. n.w. of New York. The site gradually rises from the river to a high hill, overlooking a wide expanse of country and containing many beautiful and costly residences. P. was settled by the Dutch from Bergen 1683;

## PASSAIC—PASSANT.

was traversed by the American army after its defeat in the battle of Long Island 1776; was incorporated as a village 1871; and chartered as a city 1873. In 1890 it had a city hall, free public library, home and orphan asylum, gas and electric light plants, electric street railroad, attractive macadamized streets and driveways, improved system of water-works, extensive system of sewerage under construction, and efficient fire and police departments. There were 15 churches: 3 Dutch Reformed (the oldest founded 1694), 1 Meth. Episc., 1 Prot. Episc., 1 Bapt., 1 Presb., 1 Congl., 1 Union, 1 African, 1 Rom. Cath., 1 Greek Cath., 1 German Presb., and 2 Holland; 6 public schools, including a handsome high school; 1 national bank (cap. \$100,000), 1 savings bank, and 1 state trust and safe-deposit company; and 2 daily and 1 weekly newspapers. The leading fraternal and benevolent societies are represented, and there are athletic, wheeling, and boating clubs of more than local reputation. The industries comprise extensive vineyards and wine manufactory, 3 print-works, 3 large woolen establishments, worsted-mills, rubber-works, bleachery, chemical works, planing and saw mill, okenite-works, and iron foundry. Pop. (1880) 6,532; (1885) 8,329; (1890) 13,000; (1900) 27,777.

**PASSAIC RIVER:** stream rising in Morris co., N. J., and after a circuitous s.e. course of 90 m., passing Newark, emptying into Newark Bay. It is navigable for sloops for a short distance; and its falls of 72 ft., at Paterson, furnish water-power to numerous factories, and are attractive for scenery.

**PASSAMAQUODDIES (Indians):** see **PENOBSCOTS AND PASSAMAQUODDIES.**

**PASSAMAQUODDY BAY,** *päs-a-ma-kwöd'i:* inlet opening out of the Bay of Fundy, between Maine and New Brunswick; 12 m. long, 6 wide, shut in by a cluster of islands and forming an excellent harbor. It receives the St. Croix, Didgeguash, and other rivers, and forms the harbor of the flourishing town of Eastport, Me. The bay abounds in fish, and has tides of 25 ft.

**PASSANT,** n. *päs'sänt* [F. *passant*, a passer-by: L. *passus*, a step]: heraldic term used to express the attitude of an animal in a position of leisurely walking, with his



head straight before him (fig. 1); fig. 2 represents the attitude *Passant gardant*; fig. 3, *Passant regardant*. **EN PASSANT,** ad. *äng pä-s-säng'* [F.]: in passing; by the way.

## PASSAREE—PASSAU.

PASSAREE, n. *päs-sa-rē'* [etym. doubtful]: in *naut.*, a tackle to spread the clews of a foresail when sailing large or before the wind.

PASSAROWITZ, *päs-sâ'rō-vīts*, or POSHAREWATZ (Serbian *Pozarevaz*): town in the principality of Servia, 5 m. s. of the Danube. Its streets are wide and unpaved; its houses detached, and surrounded with palisades. The town is noteworthy chiefly for the treaty signed here by Prince Eugene and the grand vizier 1718, July 21. By this treaty—which put an end to the war undertaken by the Turks against Venice 1714, for conquest of the Morea—a truce of 25 years was established, and the Banat of Temesvar, the w. portion of Walachia and Servia, the town and territory of Belgrade, and a part of Bosnia, were secured to the House of Austria.—Pop. of P. (1874) 7,829; (1885) 9,394; (1891) 11,134

PASSAU, *päs'sow*: ancient, picturesque frontier town of Bavaria, at confluence of the Inn and the Ilz with the Danube, 90 m. e.n.e. of Munich. It consists of P. proper (triangular in shape, occupying an eminence on the tongue of land between the right bank of the Danube and the left bank of the Inn), and the suburbs, Innstadt, on the right bank of the Inn; Anger and Fort Oberhaus, between the Danube and the Ilz; and Ilzstadt, on the left bank of the Ilz. At the point of junction, the Inn is both wider (834 ft.) than the Danube (696 ft.), and has had a longer course. The railway bridge, and another iron bridge on eight piers of granite, connect Innstadt with P., and the Danube is crossed by a fine bridge on seven piers, also of granite. Fort Oberhaus, on the left bank of the Danube, stands on steep, wooded cliffs more than 400 ft. high, and is connected with the castle of Niederhaus by old walls; both are now used as prisons for criminals from the upper classes, and military offenders. The appearance of P., at the confluence of two great rivers, and rising like an amphitheatre on the most beautiful spot of the Danube, is strikingly effective and picturesque. Among the chief buildings are the cathedral; the bishop's palace; the post-office, where the treaty of P. was signed 1552; the Jesuits' College, a large building now used as a school; and the Church of St. Michael. In the Cathedral square (Domplatz) is a bronze statue of King Maximilian Joseph, erected 1828. P. contains also numerous picture-galleries, collections of antiquities, and benevolent and charitable institutions. The women of P. are noted for beauty.

The natural advantages of this site, in a military point of view, were appreciated at an early period by the Romans, who erected a strong camp here, garrisoned it with Batavian troops, and from this circumstance named it *Batava Castrâ*. P. was long the seat of an independent bishopric founded in the 7th c., but secularized 1803. By the treaty of P., signed here 1552 by Emperor Charles V. on the one side, and the Prot. princes of

## PASSÉ—PASSENGER PIGEON.

Germany on the other, public recognition of the Lutheran faith among the institutions of the empire was granted. The cathedral of P. and great part of the town were consumed by fire 1662.—Pop. (1875) 14,752; (1880) 15,365; (1890) 16,633.

PASSÉ, a. *päs'sā* [F. *passé*—from *passer*, to pass (see PASS)]: past; out of use; faded; worn. PASSE PARTOUT, *päs'pär-tó'* [F. *passer*, to pass; *partout*, everywhere]: that by which one can pass anywhere; a master-key; an engraving on wood or metal of an ornamental border, the centre of which was cut out to allow another engraving to be inserted, to which the first formed a kind of frame; a light picture-frame of cardboard, having the inner edges generally gilt.

PASSECAILLE, *päs-kāy'*, AND PASSEPIED, *päs-pyā'*: two old French dances, the music of the former being in  $\frac{3}{4}$ , the latter in  $\frac{3}{8}$ , time. Compositions under these names, suggestive of the dances, though not meant for dancing, occur among the 'Suites,' or collections of short pieces for the harpsichord or clavichord, by Sebastian Bach and Handel.

PASSENGER, n. *päs'sën-jër* [F. *passager*; Sp. *pasajero*, a traveller, a passenger (see PASSAGE and PASS)]: a traveller; a wayfarer; one journeying by railway, steamboat, or coach (see TRAVELLERS, LAW AS TO: CARRIERS). PASSENGER SHIP, a steamer or sailing-vessel having accommodation for passengers by sea; an emigrant ship. *Note*.—The *n* in PASSENGER is intrusive, the oldest English being *passager*.

PASSENGER PIGEON (*Ectopistes migratorius*): species of pigeon, native of N. America, interesting from the marvellous numbers of which its flocks are often composed. The genus to which it belongs has, like the turtle-doves, a bill more slender than the ordinary pigeons, notched, and with a tumid fleshy covering above, at the base; the head is small in proportion to the body, the legs are short and strong, the feet naked, the tail is either rounded or wedge-shaped, the wings are long and pointed. The P. P., generally known in N. America as the Wild Pigeon, has a long wedge-shaped tail; the whole length 15 to 17 inches, of which the tail occupies nearly one-half. It is a beautiful bird, of very graceful form and finely colored plumage. The plumage of the female is duller than that of the male.—The P. P. is found in almost all parts of N. America, from the Gulf of Mexico to the Arctic regions. It is not, properly speaking, a bird of passage; its migrations being apparently consequent altogether on the failure of supplies of food in one locality, and not connected with the breeding-season or the season of the year. Its power of flight is very great, and it is supposed to be able to sustain a long flight at the rate of 60 m. an hour. Passenger pigeons have been killed in the neighborhood of New York with their crops full of rice, which they must have collected in the fields of Carolina or Georgia not

## PASSENGER PIGEON.

many hours before. It is not, therefore, surprising that wanderers of this species should occasionally appear in Britain and in other regions far from their native abode. The nest of the P. P. in the American forests consists usually of a few dry twigs placed in a fork of the branches of a tree, and containing two eggs, sometimes only one egg. They breed two or three times in a season. In the backwoods, where vast numbers of pigeons build in one breeding-place, many nests, sometimes 100 or more, are often seen in one tree. These great breeding-places extend over a vast tract of forest, sometimes 40 m. in length; but in the more cultivated parts of the United States the P. P. builds singly and not in communities. The numbers of birds forming the communities of the western forests surpass calculation. Flocks of them are seen flying at great height in dense columns,



Passenger Pigeon (*Ectopistes migratorius*).

eight or ten m. long; and there is reason to suppose, from the rapidity of their flight, and the number of hours taken by a column in passing a particular spot, that in some of their great migrations the column, a mile broad, is more than 150 m. long. Their roosting-places, as well as their breeding-places, are of prodigious magnitude. The graphic descriptions of Wilson and Audubon are too long to be quoted; but there is perhaps nothing of the kind so wonderful in relation to any species of bird. The noise of wings and of cooing voices is as loud as thunder, and is heard at the distance of miles. It drowns the report of guns. The multitudes which settle on trees break down great branches by their weight, so that it is dangerous to pass beneath. They crowd together, alighting one upon another, till they form solid masses like hogsheads, and

## PASSERINE—PASSION.

great numbers are killed when the branches break. The inhabitants of the neighboring country assemble, shoot them, knock them down with poles, stifle them by means of pots of burning sulphur, cut down trees to bring them in great numbers to the ground, eat them, salt them, and bring their hogs to fatten on them. Wolves, foxes, lynxes, cougars, bears, raccoons, opossums, polecats, eagles, hawks, and vultures all congregate to share the spoil. The flesh of the P. P. is of dark color, but moderately good for food; that of young birds is much esteemed. The nestlings are in general extremely fat, and are sometimes melted down for their fat alone. The food of the P. P. consists chiefly of beech-mast and acorns; but it readily eats almost any kind of nut, berry, or seed.

PASSERINE, a. *päs'sér-în* or *-în* [L. *passer*, a sparrow]: pertaining to birds of the sparrow kind. PASSERES, n. plu. *päs'sér-ēz*, or PAS'SERINES, n. plu. *-înz*, order of birds to which the sparrows belong: see INSESSORES.

PASSIBLE, a. *päs'sî-bl* [F. *passible*; It. *passibile*, able to suffer—from L. *passib'ilis*—from *passus*, suffered]: capable of feeling; susceptible of impressions from external agents. PAS'SIBLENESS, n. *-nēs*, or PAS'SIBIL'ITY, n. *-bil'î-tî*, aptness to feel or suffer; susceptibility of impressions from external agents.

PASSIFLORA, n. *päs'sî-flō'ră* [L. *passus*, suffered; *flos* or *flōrem*, a flower]: the genus of plants which includes the passion flower: see PASSION FLOWER.

PASSING, a.: supreme: see under PASS.

PASSION, n. *păsh'ün* [F. *passion*, passion—from L. *passiōnem*—from *passus*, borne or suffered: Gr. *pathos*, suffering: Skr. *bāth*, to make to suffer: It. *passione*]: violent excitement and agitation of mind in anger; anger; love; eager or vehement desire. THE PASSION, the sufferings of Christ Jesus between the Last Supper and his death. PAS'SIONS, n. plu. *-ünz*, those desires or workings of the mind that generally seek relief or gratification, such as anger, fear, love, joy, ambition, avarice, revenge, etc. PASSIONED, a. *păsh'ünd*, in *OE.*, disordered; expressing passion; violently affected. PAS'SIONLESS, a. *-lēs*, of a calm temper; not easily excited to anger. PAS'SIONATE, a. *-ün-ât* [mid. L. *passionātus*]: easily excited or moved to anger; feeling or expressing strong emotion; arising from passion. PAS'SIONATELY, ad. *-lî*. PAS'SIONATENESS, n. *-nēs*, the state of being passionate; vehemence of mind. PAS-



Passion Cross.

SION CROSS, cross of the form on which the Lord Jesus suffered; having a long stem and a short transverse near the top. It is of occasional occurrence as a heraldic charge, though less frequent than many other varieties of cross. A passion cross, elevated on three steps or degrees (said by heralds to represent the

## PASSION FLOWER.

virtues of Faith, Hope, and Charity), is called a Cross Calvary. PASSION FLOWER, a flower so named from a fancied resemblance to the instruments of the Lord's crucifixion, and various attendant manifestations; popular name for the genus *Passiflora*, ord. *Passifloracæ* (see below). PASSION-TIDE (see PASSION WEEK, below). PASSION WEEK, name frequently given in England and the United States to the week immediately preceding Easter, and otherwise called HOLY WEEK (q.v.). But by the proper rubrical usage, Passion Week is that which precedes Holy Week, and is the second week before Easter, commencing on PASSION SUNDAY, the fifth Sunday in Lent. In the Roman calendar, the whole of the last fortnight of Lent is known by the name Passion-tide, and all the services of that time differ in many respects from those, not alone of the year, but even of the rest of Lent. The verse *Gloria Patri* is discontinued both in the mass and in the Breviary, and all pictures, crucifixes, statues, and other sacred representations are veiled during the whole of Passion-tide. PASSION PLAYS (see MYSTERIES AND MIRACLE-PLAYS).—SYN. of 'passion': zeal; love; anger; ardor; eagerness; feeling; emotion.

PASSION FLOWER (*Passiflora*): genus of plants, natives almost exclusively of warm parts of America, and belonging to the nat. order *Passifloracæ*, which is an order of exogenous plants, of which more than 200 species are known, mostly climbers, having tendrils which spring from the axils of the leaves, herbaceous or half-shrubby, natives of tropical and sub-tropical countries, but rare in Asia and Africa. The leaves of the *Passifloracæ* are alternate, simple, and variously lobed. The flowers are generally hermaphrodite, with a colored calyx, generally of five segments; the segments of the corolla equal in number to those of the calyx or absent, and several rows of filamentous processes springing from within the cup, which is formed by the consolidated calyx and corolla; the stamens, generally five, and generally united by their filaments, inserted at the base of the tube of the calyx; the ovary free, generally elevated on a long stalk, one-celled; three thick styles with dilated stigmas; ovules numerous. The fruit is either fleshy or capsular. In the passion flowers it is fleshy. This genus received its name from fanciful persons among the first Spanish settlers in America, imagining that they saw in its flowers a representation of Christ's passion; the filamentous processes being taken to represent the crown of thorns, the nail-shaped styles the nails of the cross, and the five anthers the marks of the wounds. The species are mostly half-shrubby evergreen climbers, of rapid growth; and most of them have lobed leaves, with from two to seven lobes. The flowers of many are large and beautiful, on which account they are often cultivated in hothouses. Some of the species also are cultivated in tropical countries for their fruit, par-



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ticularly those of which the fruit is known by the name Granadilla (q.v.). The fruit of *P. edulis* also is somewhat acid and of pleasant flavor, and ices flavored with it are delicious. Its fruit is about two inches long, and an inch and a half in diameter, of livid purple color, with orange pulp.—The fruit of some species of *P.*, however, is not only uneatable, but fetid; and the roots, leaves, and flowers of some, as well as of other *Passifloraceæ*, have medicinal properties, narcotic, emmenagogue, anthelmintic, febrifugal, etc. *P. rubra* is called Dutcl-man's Laudanum in Jamaica, because a tincture of the flowers is used as a substitute for laudanum. The most hardy species of *P.* is the BLUE *P.* (*P. cœrulea*), which thrives in parts of France, and even in s. England. Where the climate is suitable, passion flowers form an admirable covering for arbors and trellises.



Passion Flower (*Passiflora cœrulea*).

**PAS'SIONISTS:** religious congregation of priests of the Rom. Cath. Church, the object of whose institute, indicated by their name, is to preach 'Jesus Christ, and him crucified.' The founder, Paul Francis, surnamed Paul of the Cross (1694–1775), was b. at Ovada, diocese of Acqui, kingdom of Sardinia. Having commenced his career as a hermit, he formed the design of enlisting others in the missionary life; and being ordained priest 1737, he associated himself with ten others, and obtained for his plan the approbation of successive popes, together with the convent on the Celian Hill, at Rome, still the mother-house of the congregation. The special object of the institute was to instil into men's minds by preaching, by example, and by devotional practices, a sense of the mercy and love of God as manifested in the

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passion of his Son. Hence the cross appears everywhere as their emblem, in their churches, in their halls, and in the courts and public places of their monasteries. A large crucifix, moreover, forms part of their very striking costume. They go barefooted, and practice many other personal austerities, rising at midnight to recite the canonical hours in the church; and their ministerial work consists chiefly in holding what are called 'missions,' wherever they are invited by the local clergy, in which sermons on the passion of Christ, on sin, and on repentance, together with the hearing of confessions, hold the principal places. For a time, Paul's congregation remained in obscurity; but it has risen into notice within the last half-century, new houses having been founded in England, Ireland, Belgium, America, and Australia.

PASSIVE, a. *pās'siv* [F. *passif*, passive—from L. *passivus*—from L. *passus*, suffered: It. *passivo*]: not opposing or resisting; suffering without resistance; submissive; denoting that form of a verb in which the object of the active voice becomes the subject. PAS'SIVELY, ad. *-lī*, in a passive manner; without agency or resistance. PAS'SIVENESS, n. *-nēs*, the quality of being passive, or of receiving impressions from external agents. PASSIVITY, n. *pās-siv'ī-tī*, the tendency of a body to preserve its state of either motion or rest. PASSIVE OBEDIENCE, absolute obedience of subjects to a sovereign. PASSIVE RESISTANCE, refusing to do or pay what the law requires, and taking the consequences. PASSIVE TITLE, in *the law of Scotland*, liability of an heir, or one who represents and interferes with the estate of a deceased person, to pay all the debts of the deceased. The doctrine of holding an heir universally liable has latterly been much restricted.—SYN. of 'passive': inert; inactive; unresisting; enduring; patient; quiescent; suffering; yielding.

PASSOVER, n. *pās'ō-vēr* [Eng. *pass*, and *over*]: the great annual festival of the Jews, commemorative of their deliverance out of Egypt, when the destroying angel *passed over* their houses and entered those of the Egyptians: the sacrifice offered at the feast. PASSOVER BREAD or CAKE, unleavened cakes used by the Jews at the festival of the Passover.—The *Passover* (*Pesach*, *Pascha*) is the first and greatest of the three annual feasts of Israel (*Regalim*) instituted by Moses, at which it was incumbent on every male Israelite to make a pilgrimage to the house of Jehovah. It was celebrated on the anniversary of the Exodus from Egypt—i.e., on the 14th day of Nisan, otherwise called Abib, the period of the first full moon in the spring—and lasted eight days. In commemoration of the incidents connected with the great event of the liberation of the people, it was ordained that unleavened bread only should be eaten during this festive period, whence it bore the name also *Chag hamazzoth* (Feast of Unleavened Bread); and, further that a lamb one year old, and free from blemish,

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roasted whole, together with bitter herbs, should form the meal in every house on the eve of the feast. Prayers and thanksgivings, all with reference to the marvellous redemption from Egyptian bondage, accompanied the repast, at which the members of the family or families who had joined in the purchase of the lamb had to appear in travelling garb, in memorial of the journey of Israel forth from Egypt. At a later period, a certain number of cups of red wine were superadded to this meal, to which, as its special ceremonies and the order of its benedictions were fixed, the name *Seder* (arrangement) was given. The name P. was more strictly limited to the first day, in which the paschal lamb was entirely consumed, the reserving of any part of it to the next day being expressly forbidden (Ex. xii. 10); and the name Feast of Unleavened Bread belonged rather to the remaining days, on which other animal food was eaten; though the names were often used indiscriminately.

The P. is regarded generally by Christian theologians as at once a sacrifice and a sacrament, and in the former character as an eminent type of the sacrifice of Christ. The death of Christ at the very time of the P. is regarded as corroborative of this view, which indeed appears plainly in certain passages of the New Test., e.g., Jn. xix. 36, I Cor. v. 7, in which last place the Lord Jesus is designated 'Christ our Passover.' The P. is regarded as typical of Christ in its connection with the deliverance of Israel from the bondage of Egypt, held to typify our salvation from the bondage of sin; in its being a sacrifice, and that of a lamb without blemish—the perfection of the paschal lamb, as of the other sacrificial victims, being supposed to signify the perfection of the great sacrifice; and in many minor particulars, of which one is that referred to in Jn. xix. 36, that no bone of the paschal lamb was to be broken.

The paschal meal, as at present celebrated among the Jews, has more the character of a hallowed family-feast, with reference, however, to the great national event. The greater part of the Hebrews who live out of the Holy Land celebrate it on the first two evenings, as, owing to the uncertainty prevalent at one time with respect to the fixing of the new moon by the Sanhedrin at Jerusalem, it was ordained that the 'Exiles' should celebrate all their festivals—except the Day of Atonement—on two successive days, a law still in force among the orthodox. The regulations of the 'lamb for each house,' the travelling garb, etc., are abrogated, but many further symbolical tokens have been superadded; reminiscences both of the liberation from Egypt, and of the subsequent downfall of the sanctuary and empire. The order of prayers and songs to be recited on these evenings also has received many additions, and even mediæval German songs have crept in, as supposed to contain a symbolical reference to the ultimate fate of Israel. See HAGGADA (*shel Pesach*): FESTIVALS: EASTER: LORD'S SUPPER.

## PASSOW—PASSPORT.

**PASSOW**, *pâs'so*, FRANZ LUDWIG KARL FRIEDRICH: philologist: 1786, Sep. 20—1833, Mar. 11; b. Ludwigslust, Germany. He studied at Gotha and Leipzig, giving special attention to philology and theology; was prof. of Greek at Weimar 1807–10, for the next 4 years was director at Jenkau, and was appointed prof. of ancient literature in the univ. at Breslau 1815. In addition to the texts and translations of various works, he published a valuable Greek-German lexicon, which passed through 4 editions in a few years. He died at Breslau.

**PASSPORT**, n. *pâs'pört* [F. *passepport*, a passport—originally, permission to leave or enter a port—from *passer*, to pass; *port*, a harbor: It. *passaporto*—from *passare*, to pass; *porto*, a harbor]: written warrant of protection and permission to travel, granted by the proper authority, to persons moving from place to place. Every independent state has right to exclude whom it pleases from its territory, and may require that all strangers entering it be furnished with properly authenticated documents, showing who they are, and for what purpose they are visiting the country. Passports are issued sometimes by the ministers and consuls of the country which the traveller intends to visit, which cannot, however, be done without the consent or connivance of the state of which the holder of the instrument is a subject; they properly proceed from the authorities of the state to which the traveller belongs, and ought to bear the *visa* or countersignature of the minister or consul of the country which he is about to visit. In some European states no one is allowed to go abroad without a P. from his govt. authorizing him to leave the country—a provision used as a means of detaining persons charged with crime; and passports are even required of the natives to enable them to go from place to place in their own country. The regulations of different states have varied much regarding the use of passports; and of late years there has been great relaxation of the stringency of the regulations connected with them. Since the facilities of travelling have so greatly increased, it seems to have become the prevalent opinion that the P. system tends to obstruct the free intercourse desirable between citizens of different countries; while it is ineffectual to prevent the entrance of dangerous or suspicious characters, who can obtain passports on false pretenses, or make their way in without them. Within the United Kingdom of Great Britain and Ireland, no passports are required, since the old law demanding them is not enforced; but for a British subject travelling in some parts of the continent they are still requisite. Formerly, the greater number of British subjects travelling abroad used to be furnished with passports from the ministers or consuls of the countries which they purposed to visit; the lord provost of Edinburgh was also in the way of issuing passports to Scotchmen. Of late years the P. most used by British subjects is that of the British sec. of state for foreign affairs, which is now granted to

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any British subject for a fee of two shillings, and is good for life. Where the P. system is in full force, it is required that the P. be countersigned by the minister or consul of the country which the holder means to visit, this visa being of force for only a year. The French govt. allows foreigners to enter and leave France, and travel in it, without passports; but passports have sometimes been asked for when France is entered from the s. and e. In Belgium, Holland, Germany, Switzerland, Austria, Italy, Denmark, Norway, and Sweden, passports are no longer required. For Greece and Portugal they are necessary, and the visa is insisted on in Russia, Turkey, and Egypt. A foreigner travelling in countries where passports are not *de rigueur* will often find it a great advantage to have one as evidence of his identity and nationality. Till lately, throughout the greater part of Europe, a traveller was liable to be called on to produce his P., not only at every frontier town, but at every garrison town through which he passed. In several of the countries where passports are not required of travellers, they are of decided advantage, if not a necessity, to those who propose to settle there for some time—e.g., in Germany, especially since the anti-socialist legislation. In the United States there is no requirement of passports for ordinary travellers.

In time of war, passports or safe-conducts are granted by the supreme authority on the spot—i.e., the officer in command—to insure safety to the holders when passing from spot to spot, or while in the performance of some act specified in and permitted by the P. Passports may be granted for goods as well as individuals; and, in time of war, the P. of a ship is the formal voucher of its neutral character. It purports to be a requisition on the part of the govt. of a state to allow the vessel to pass freely with her company, passengers, goods, and merchandise, without hindrance, seizure, or molestation, as being owned by citizens or subjects of such state.

PASSY, *pâs-sē'*: town of France, dept. of Seine, a suburb of Paris, and included within its fortifications: see PARIS.

PASSYMEASURE, n. *päs'si-mězh'ūr* [a corruption of It. *passamezzo*—from *passo*, a step or pace; *mezzo*, middle]: an old stately dance; a cinque-measure [F. *cinque*, five]—that is, a dance of five measures.

PAST, a. *pâst* [L. *passus*, a pace or step: Eng. *pass*, which see]: gone by or beyond; not present nor future; ended; accomplished: PREP. beyond; out of reach of: AD. by, as, the wind swept *past*. THE PAST, time gone by. PAST MASTER, one who has been the master of a civic company or corporation; one who has filled the chair of a Freemason's lodge.

## PASTA—PASTE.

**PASTA**, *pâs'tâ*, GIUDITTA (JUDITH): one of the most distinguished opera-singers of modern times: 1798–1865; b. near Milan, Italy. She received her musical education partly at Como, under the chapel-master of the cathedral there, and partly in the conservatoire at Milan. After 1811 she appeared at various theatres of the second rank in n. Italy, and obtained a respectable success, but did not give indication of more than average ability. Her first great triumph was at Verona 1822. The year following she was engaged at the Paris Italian Opera, where her singing excited great admiration. From this moment she labored incessantly to reach the ideal perfection. 1825–30 was the period of her most splendid triumphs, won principally in London and Paris. Vienna, where she accepted an engagement 1832, witnessed the last. Some time afterward she withdrew from the stage, and purchased a villa on the banks of Lake Como, where, and at Milan, she resided till she died. P. in her best days had a magnificent voice, which easily passed from clear, shrill soprano notes to the gravest contralto tones. In addition she had fine dramatic energy and stateliness of manner, that suited lofty and imposing characters. Her principal rôles were *Medea*, *Desdemona*, *Semiramide*, *La Sonnambula* (the opera of this name was written for her by Bellini), and *Giulia* in *Romeo e Giulia*.

**PASTE**, n. *pâst* [It. *pasta*; OF. *paste*, paste, dough; Sp. *pasta*, paste; F. *pâte*, paste—from mid. L. *pasta*, paste; Gr. *pâstê*, a mess of food]: any semi-solid tenacious mixture: dough prepared for pies, etc.: any soft, sticky composition, as boiled flour and water, used as a glue or cement (see below): imitations of precious stones by means of a bright, heavy glass tinted with metallic oxides (see GEMS, IMITATION): V. to cement or fasten with paste. **PAST'ING**, imp. **PAST'ED**, pp. **PASTY**, a. *pâs'tî* [OF. *pasté*; F. *pâté*, a pie, a pasty]: resembling paste: N. a crust-pie raised without a dish. **PASTEBOARD**, very thick, stiff paper; a stiff material made of sheets of paper pasted together.

**PASTE**: term denoting various compositions in which there is sufficient moisture to soften without liquefying the mass.

Common or adhesive P. is made by mixing wheaten flour with cold water in the proportion of about 2 lbs. to a gallon. The water is added by degrees, and well stirred in to prevent lumpiness. About an ounce of powdered alum is sometimes added to increase its adhesiveness; and for shoemakers and bookbinders about an ounce and a half of finely powdered rosin is substituted for the alum, which thickens it and renders it much more tenacious. When the ingredients are thoroughly mixed, they are boiled, great care being taken to stir them thoroughly while boiling, to prevent burning. This P. is used for a great variety of purposes, especially by paper-hangers, bill-stickers, book-

## PASTEL.

binders, pasteboard-makers, etc. An adhesive P., *Chinese Paste*, is made by reducing to perfect dryness bullocks' blood, which is then powdered and mixed with one-tenth of its weight of finely powdered quicklime. When used, it is mixed with water sufficient to form a P., which is a strong cement for pottery, wood, stone, etc.

*Fruit Paste* is made by taking the juice of any fruit and dissolving in it an ounce to a pint of gum arabic—or gum senegal, which many prefer; then evaporate by a gentle heat until the liquid is as thick as syrup, and add to every lb. of it a lb. of finely-powdered refined sugar; continue the heat, and stir it until the sugar and juice are thoroughly incorporated, after which it is poured out on a marble slab slightly oiled. When cooled, it may be formed into lozenges for use. An imitation of this is often made by mixing 3 parts of citric acid, 24 parts of gum, and 48 parts of refined sugar, and dissolving the whole in water, and gently heating it to insure complete solution and mixture. It is then variously colored and flavored with any of the fruit essences. This P. is often sold under the name of jujubes, which were formerly lozenges of fruit P. prepared from the juice of the jujube fruit, *Ziziphus jujuba*.

*Polishing Pastes* vary according to the materials upon which they are to be employed. For brass, the best kind is a mixture of two parts of soft soap with four parts of rotten-stone in very fine powder. Another sort is eight parts of fine rotten-stone powder, two parts of oxalic acid powdered, three parts olive-oil, and enough turpentine to make them into a P. For iron, a mixture of emery powder and lard is used; for pewter, a mixture of finely powdered bath-brick and soft soap. For wood, a paste called furniture P. is made by adding spirit of turpentine to bees-wax sufficient to form it into a soft P., which is rubbed on thinly with a brush and woolen rag, and afterward polished with a dry woolen cloth and soft brush.

Shaving pastes are very numerous, but the base of all is soap. For other applications of the word paste, see GEMS, IMITATION: MACARONI.

PASTEL, n. *päs'tël* [Sp. and F. *pastel*—from It. *pastello*, a bit of pie, a pastel—from mid. L. *pastillum*, a little loaf or roll—from L. *pastus*, food: OF. *paste*; It. *pasta*, paste]: a plant called the woad, and the blue dye which it yields; *Isätis tinctoriä*, ord. *Cappar'idäcëe*; a kind of paste made of chalk mixed with other materials and various colors, and formed into Pencils or Crayons (q.v.). Drawings with such dry, colored crayons may be made on paper or parchment, and have been used especially in portraiture.—PASTEL is also a name for Wood (q.v.)

## PASTERN—PASTEUR.

PASTERN, n. *päs'tèrn* [OF. *pasturon*, the pastern of a horse, fetters—from *pasture*, a tether: F. *pâtureon*: mid. L. *pastōriūm*, a shackle with which horses were tethered at pasture, the joint on which the shackle was fastened: It. *pastoja*, the pastern of a horse, fetters]: the lowest part of a horse's leg, consisting of the foot under the fetlock to the hoof or heel; in *OE.*, tethers or clogs tied to the feet. PASTERN JOINT, the joint next the foot.

PASTEUR, *pâs-tér'*, LOUIS: born 1822, Dec. 27, Dôle, dept. of Jura, France: chemist, microscopist, and biologist. He entered the university 1840; took the degree sc.d. 1847; was appointed prof. of physics at the Faculty of Sciences, Strasburg, 1848; dean of the Faculty of Sciences at Lille 1854; 'scientific director' of the École Normale, Paris, 1857; prof. of geology, physics, and chemistry in the École des Beaux Arts, Paris, 1863; prof. of chemistry at the Sorbonne 1867. Science is indebted to P. for important services in molecular chemistry, which won for him the Jecker prize 1861, and other tokens of appreciation. But his highest honors have been gained in the department of the chemistry of ferments and in that of mycology. He has studied the causes of sundry 'diseases' of wine, and provided an effectual method of preventing them. He investigated the disease of the silk-worm when it threatened ruin to an important French industry, and discovered both its cause and the cure. Not less important is P.'s discovery of the cause (*bacilli*) of anthrax in cattle, and of a means of cure by inoculation. In studying the subject of rabies, he traced it to the presence of microbes in the medulla oblongata of the rabid animal: his method of treating hydrophobia is by inoculation with attenuations of the medulla and spinal cord of rabbits that have been infected with rabies. See BACTERIUM: GERM-THEORY: RABIES.—In recognition of his distinguished services to science and industry, P. received from the Austrian ministry of agriculture a prize of 10,000 florins 1872; from the Société d'Encouragement a prize of 12,000 francs 1873; from the French nation, by vote of the national assembly, a life-pension of 12,000 francs 1874, to which was added a retiring-pension as ex-prof. 1875. He was decorated with the cross of the Legion of Honor 1853; chosen member of the Institute 1862; officer of the Legion of Honor 1863; commander 1868; grand officer 1878. The London Royal Soc. awarded to P. the Rumford Medal for his researches relative to the polarization of light 1853, and 1869 he was elected foreign member of that society. Funds have been contributed liberally for the support of the Institut Pasteur, in which his treatment of hydrophobia is administered. He is the author of many articles in periodical publications, and of a few books on the subject of his researches. He d. 1895, Sept. 28.



## PASTEUR INSTITUTE—PASTIL.

PASTEUR INSTITUTE, NEW YORK: hospital for treatment, according to Pasteur's method, of persons bitten by rabid dogs and other animals: see HYDROPHOBIA: PASTEUR, LOUIS: RABIES. The P. I. was founded 1890, Feb. 18, by Dr. Paul Gibier, sometime associated with Pasteur. In the first 8 months after the P. I. was opened, 610 persons applied for treatment; but it was ascertained that 480 of them were in no danger of developing hydrophobia, investigation having shown that the animals by which they had been bitten were not victims of rabies. In the remaining 130 cases, the Pasteur inoculations were administered, hydrophobia having been demonstrated either by veterinary examination of the animals, or by inoculation in the laboratory, or by the result of bites inflicted by the same animals on other persons. These inoculated patients all escaped hydrophobia. Of the former class of applicants, 400 received the medical treatment or consultation gratis, and of the latter class 80. Of the patients who received the medical treatment, 64 were from N. Y., 12 from N. J., 12 from Mass., 8 from Conn., 9 from Ill., 1, 2, or 3 severally from 13 other states.

PASTEURIZATION: process of sterilizing milk—killing the germs by a temperature considerably below the boiling-point.

PASTEUR'S SOLUTION, n. *pâs-têrz'*- [after the celebrated French biologist]: in *biol.*, a solution in which to cultivate ferments from spores.

PASTICCIO, n. *päs-tich'î-ô* [It., a mess or medley]: a medley; an *olio*; in *painting*, a work of art, of original conception as to design, but a direct copy of the style and manner of some other painter.

PASTIL, n., or PASTILLE, n. *päs-têl'* [dim. of Fr. *pastille*—from L. *pastillum*, aromatic lozenge—from *pastus*, food: It. *pastello* (see PASTE)]: aromatic or medicated sugar-drop or lozenge: in *art*, thin, round cake of water-color material, less hard than the solid cakes: composition of aromatic woods in the form of a small cone, burned either as incense or for diffusing an agreeable odor. These cones, known as *fumigating pastils*, are composed of charcoal powder, with such aromatic gums as benzoin, labdanum, etc.; and powders of sweet-scented woods and barks, as sandal-wood, cinnamon, and especially cascarilla barks. Essential oils are added, and the whole is worked into a paste with a little gum-mucilage, and formed into small sharp-pointed cones about an inch and a half high, and half an inch broad at the base. When perfectly dry, they are used by lighting at the point, and as they burn down an agreeable odor is given out with the smoke. Very tasteful vessels, called P. burners, usually of porcelain, are made for using them. Another kind of P., usually in the form of a small pill covered with gold or silver leaf, is used for perfuming the breath; it is of the same ingredients, excepting the charcoal.

## PASTIME—PASTOR.

**PASTIME**, n. *päs'tim* [Eng. *pass*, and *time*: F. *passé-temps*: It. *passa tempo*]: that which amuses and serves to make time pass pleasantly; amusement; entertainment.

**PASTO**, *päs'tō*: town of the United States of Colombia, on a high plateau between two ridges of the Andes, 148 m. n.e. of Quito; more than 8,500 ft. above sea-level. It is in the direct route from the Popayan Pass to Quito. Pop. about 7,000.

**PASTON LETTERS**: collection of family and friendly correspondence, 1422–1505, addressed mainly to John Paston, Esq., Norfolk, England (d. 1466), to his son Sir John, and to other members of the same house. They contain valuable illustrations of social life and civil history during the Wars of the Roses. The P. L. were published first by John Fenn 1787. See ed. by James Gairdner (1872–75).

**PASTOR**, n. *päs'tér* [L. *pastor*, a feeder, a shepherd—from *pasco*, I feed: It. *pastore*: F. *pasteur*]: shepherd: clergyman having the care or spiritual feeding of a church and flock. **PASTOR-LIKE**, or **PAS'TORLY**, a. *-lī*, becoming a pastor. **PAS'TORLESS**, a. *-lēs*, without a pastor. **PAS'TORATE**, n. *-āt*, or **PAS'TORSHIP**, n. *-shīp*, the office or jurisdiction of a pastor. **PAS'TORAL**, a. *-āl* [F. —L.]: pertaining to shepherds; pertaining to the care of a flock or a church; addressed to the clergy of a diocese by its bishop (see **PASTORAL LETTER**): rustic; rural: N. a sort of dramatic poem on the incidents of a country life (see **PASTORAL POETRY**): a bishop's pastoral letter, or that of a council of churches, or of an ecclesiastical court, addressed to both clergy and people. **PAS'TORA'LE**, n. *-tō-rā'lē*, in *music*, an air in a tender, soothing strain; the figure of a dance.

**PASTOR**, *päs'tér*: genus of birds of the starling family (*Sturnidæ*), differing from starlings in the compressed and slightly curved bill. In habits, as in characters, they are very nearly allied to starlings. The name P. is



Rose colored Pastor (*Pastor roseus*).

supposed to be derived from their being frequently seen with flocks of sheep. The only European species is the **ROSE-COLORED P.**, or **Rose-colored Ouzel** (*P. roseus*).

## PASTORAL EPISTLES.

PASTORAL EPISTLES: three epistles of the apostle Paul—viz., two to TIMOTHY (q.v.) and one to TITUS (q.v.): named pastoral because the contents relate chiefly to the pastoral care of Christian churches. Notice is taken here of difficulties common to the three epistles, and having reference to authenticity and dates. The difficulties are of a nature that might be expected, have involved much minute discussion, and can never probably be removed wholly, though a reasonable conclusion may be reached. They are in part linguistic, in part historical. First, in respect to the linguistic, it is claimed that the epistles contain 133 words not occurring in other writings ascribed to Paul, though found elsewhere in the N. Test.; also, that many of his most characteristic expressions are absent, and that some of these, particularly, are replaced by substitutes; and, further, that there is a tendency to unusual compound words, while there is a simpler style—an absence of the highly involved sentences found in his longer epistles. On the other hand, it is affirmed that there is a large element of thought and language in common with his other writings, and a considerable resemblance to the epistle to the Galatians in particular; and that a forger would have made resemblances even more striking, or would have avoided striking differences. If the epistles can find no satisfactory place except in the acknowledged hiatus of his journal during the last years of the apostle, the discrepancies of style would be the more easily explained, namely, by the fact that style is well known to change, in many instances, with advancing years, and in this case may have changed even in the use of Greek particles, on which much emphasis is laid by critics. Moreover, the apostle was a cultured and progressive man, alive to everything, and in constant motion, coming in contact with new peoples and dialects and ideas, continually; and these were not elaborate letters to churches, through amanuensis or secretary, but direct, free, informal letters to companions in work. All this goes far to remove the objections that concern diction; and, indeed, both the style and spirit, in letters so addressed, have a stamp of genuineness that confirms the testimony from the Christian fathers, who refer to the epistles as well-known ones of the apostle Paul. The other line of objection, the historical, has to do with time and place of writing. At first glance, the letters themselves seem to make this clear. The first to Timothy speaks of the apostle as having gone into Macedonia and left Timothy at Ephesus; the second to Timothy places the writer then, or then recently, in Rome, in prison after a trial, near the end of his life, expecting Timothy, and refers to an apparently recent visit to Troas, Corinth, and Miletus; the epistle to Titus presents the writer and Titus as recently in Crete, where the latter had remained, while the writer was to winter at Nicopolis. Various attempts have been made to fit I Tim. and Titus into what itinerary we have of

## PASTORAL LETTER.

the ceaseless journeyings of the apostle; but there are objections to the hypotheses. An important point is that a forger would have made a clear place and time. The difficulties, in the absence of a continuous and complete life of Paul, have been indefinitely adjourned by supposing that, after a journey to Spain, he went to Ephesus, and thence to Macedonia (on his way writing I Tim.); then to Crete, after which he wrote to Titus, when about to start for Nicopolis, at which place, having visited Miletus and Corinth on his way, he may have been arrested the second time and taken to Rome, where he wrote II Tim. Still other objections have been raised in regard to the heresies denounced in these epistles: a laborious effort has been made to identify them with forms or developments of error later than the time of Paul, and to show that so great a corruption of doctrine could not have ripened in the short time of the churches' existence. But there is no proof that the errors were other than the first inroads of the Judaizing and theosophizing and antinomian tendencies elsewhere referred to in the N. Test. (e.g., Acts xx. 29-30 and Col. ii. 8-23). It certainly does not take a generation for false teaching to arise, especially in times of movement and intellectual ferment. On the radical side of this discussion may be mentioned Baur, Eichhorn, and, in part, Schleiermacher; on the conservative, *Meyer's Commentary*, Dr. Wace in the *Speaker's Commentary*, and Farrar's *Genuineness of the P. E.*, and his *St. Paul*.

PASTORAL LETTER: letter addressed either at stated times, or on some notable occasion, by a 'pastor,' but especially by a bishop, to the clergy under his jurisdiction, to the laity of his nock, or to both. Of the former class, in the Church of Rome, are the so-called Lenten Mandates, or instructions, issued before the commencement of Lent, and making known the regulations enacted for the observance of the Lenten fast, the dispensations granted, and the devotions and other pious works prescribed. Such are also the letters issued by a bishop on many of the chief festivals of the year. It is usual for bishops, besides their stated letters, to address to their clergy or people instructions suited to any particular emergency, and sometimes to take occasion from the issuing of the stated P. L. to offer instruction on some topic of importance which may engage public attention at the time, on some prevalent abuse or scandal, or some apprehended danger to the faith or to morals. To this class belong many fragments from the early Fathers, especially in the Western Church. In some countries the govt., as formerly in Austria, claimed to exercise a censorship over the pastoral letters to be issued by the bishops. This right, however, is regarded by churchmen as a usurpation, and, although submitted to, is admitted only under protest: see PLACETUM REGIUM: FEBRONIANISM

## PASTORAL POETRY.

PAS'TORAL PO'ETRY: class of poetry which professes to delineate the scenery, sentiment, and incidents of shepherd-life. Probably the first attempts to give rhythmic expression to human feeling were to some extent of this character. Festal songs would derive at least substance and imagery from men's primitive occupation as shepherds; but as a distinct branch of poetic art, P. P. was not cultivated till a comparatively late period; for though critics are fond of pointing to the lives of the Hebrew patriarchs, and to the story of Ruth, as specimens of the antiquity of the pastoral in the East, yet, as these profess to be history, and not fiction, they can be instanced only to prove that the *material* for this kind of poetry existed from earliest ages. In fact, it was only after innocence and simplicity had passed away, or were thought to have passed away, from real life, that men began, half from fancy, half from memory, to paint the manners of the past as artless, and the lives of their ancestors as constantly happy. Thus the *Brass* age made the *Golden*. The oldest specimens of the classic pastoral are the Idyls of Theocritus (q.v.), about B.C. 275—long after Greece had produced her masterpieces in epic narrative, in the war ode, and other kinds of the lyric, in tragedy, comedy, history, philosophy, and rhetoric. Theocritus was imitated by Bion and Moschus, whose pastorals approximate in form to the drama. Among the Latins, the refined and courtly Virgil, in the reign of Augustus, wrote his *Bucolica*, or *Eclogues*, on the model of his Greek predecessors; but, however beautiful and melodious the verses of these urban writers are, we cannot suppose that the rude shepherds and shepherdesses of Italy or Sicily indulged in such refined sentiments or spent their time so poetically as there they are made to do. Virgil is as far from giving a genuine picture of pastoral life in his verse as any modern poet who prates of Chloe and Phyllis.

During the middle ages, P. P. in this artistic, therefore conventional, sense of the term, was almost unknown; but with the first glimpse of reviving classicism, the pastoral reappears. The earliest specimens are afforded by Boccaccio (q.v.), about the first modern Italian who studied Greek. To the countrymen of Boccaccio we owe the pastoral drama, of which there is no trace in ancient literature. The *Favola di Orfeo* of Poliziano (q.v.), performed at the court of Mantua 1483; is the first dramatic poem which pretends to represent the sentiments, incidents, and forms of pastoral life. Critics have forgotten this work when they made Tansillo inventor of the *favola pastorale* or *boscareccia*, on account of his *I due Pellegrini* (1539), or Agostino Beccari, whose pastoral comedy *Il Sacrificio* was played at Ferrara 1554. However, it is true that the extraordinary popularity of Beccari's piece originated a crowd of *favole boscareccie*, the finest and most poetical

## PASTORAL POETRY.

of which is the *Aminta* of Tasso, represented at the court of Ferrara 1572. A later but hardly less famous production is the *Pastor Fido* of Guarini (q.v.), pub. Venice 1590; and in the 18th e., the poet Metastasio (q.v.) revived for a moment the interest in this graceful and picturesque, but unreal, branch of literature. In Spain, during the first part of the 16th e., it abundantly flourished. The first who wrote pastoral dialogues was Juan del Eleina (about 1500); he was followed by Garcilaso de la Vega, and others. During the reign of Emperor Charles V., one may say that Spanish imaginative literature was almost wholly of a bucolic character; but in Spain, as elsewhere, it took largely the form of prose-romance (see NOVELS) rather than of poetry, deriving its inspiration from the *Daphnis* and *Chloe* of Longus, the Byzantine romancist, not from the tuneful strains of Virgil. England, however, can boast of Spenser's *Shepherd's Calendar*, which is at least full of charming poetry, and is appropriately dedicated to Sir Philip Sidney, whose pastoral romance of *Arcadia* outstrips in literary beauty all other fictions of that class. The Germans reckon Shakespeare's *As You Like It* in the list of pastoral dramas; but its right to be so classified is not clear, though we may admit that it betrays the influence of the P. P. and romance that had just ceased to be the rage among the scholarly geniuses of Europe. A similar influence is visible in the writings of other Elizabethan dramatists, e.g., in the *Faithful Shepherdess* of Fletcher. In France, P. P. is perhaps older than in any other western nation. The comedy of Adam de Lhalle, surnamed Le Bossu d'Arras (The Hunchback of Arras), entitled *Le Jeu de Robin et Marion* (and which exists in MS. in the *Bibliothèque Impériale*), belongs to the middle of the 13th e. During the civil wars in the latter half of the 16th e., the pastoral was turned to political uses. In the 17th e., it continued for some time to be popular—rather, let us say, fashionable. Even the great Richelieu alleviated the cares of office with the composition of *La Grande Pastorale*; but here, too, the poem soon gave way to the prose-romance, hardly less unreal and far more exciting.

One of the best pastorals, ancient or modern, is the *Gentle Shepherd* of Allan Ramsay (q.v.), pub. 1725, a genuine picture of Scottish life, passed in simple rural employments. 'The affected sensibilities and feigned distresses of the Corydons and Delias find no place in Ramsay's clear and manly page. He drew his shepherds from the life, placed them in scenes which he actually saw, and made them speak the language which he every day heard.' His English contemporaries, Pope, Ambrose Philips, Gay, and others, who form the 'Augustan' or Queen Anne school of poets, also addicted themselves to pastoral poetry; but though there is much fine description in the verses, they are, in general, purely conventional performances, in imitation of the classic poets, who did not imitate nature. From this censure,

## PASTORAL STAFF.

however, must be excepted the six pastorals of Gay, entitled *The Shepherd's Week*, which are full of honest country humor, and contain charming pictures of English country life. Since the early part of the 18th c., however, P. P., strictly so called, has ceased to be cultivated in England and almost everywhere else. In the pages of Wordsworth, who lived all his days among the Cumberland shepherds, are many exquisite glimpses of pastoral life, as it presented itself to the profound and tender imagination of that great poet of nature, but few direct delineations of pastoral manners. Germany imitated abundantly the French and Italian models during the greater part of the 18th c. The last and best of the German series is the *Erwin and Elmire* of Goethe's youth. The general impression appears to be that the age of P. P. has passed away finally, and that Damon and Chloe will never reappear in verse.

PASTORAL STAFF; sometimes also, though not properly, called CROSIER (q.v.): one of the insignia of the episcopal office, sometimes borne also by an abbot.



Pastoral Staff.

It is a tall staff of metal, or of wood ornamented with metal, having, at least in the Western Church, the head curved in the form of a shepherd's crook, as a symbol of the pastoral office. The head of the P. S. of an abp., instead of the crook, has a double cross, from which its name of *crozier* is derived. In the Greek Church the staff is much shorter, and the head is either a plain Greek cross of the form of the letter *Tau*, or it is a double-headed crook, which sometimes appears in the shape of the upsilon,  $\Upsilon$ . It is difficult to determine the time at which first the P. S. came into use. The first distinct allusion to it is in St. Augustine's commentary on Ps. cxxiv. Gregory of Tours, in his life of St. Martin, mentions the P. S. of St. Severinus, bp. of Cologne in the end of the 4th c. From an early time, the P. S. was connected with the actual possession of the jurisdiction which it symbolizes. The giving of it was one of the ceremonies of investiture; its withdrawal was part of the form of

deprivation; its voluntary abandonment accompanied the act of resignation; its being broken was the most solemn form of degradation. So also the veiling of the crook of an abbot's P. S., during the episcopal visitation, signified the temporary subjection of his authority to that of the bishop. An abbot being required to carry his P. S. with the crook turned inward showed that his authority was purely domestic. The pope does not use a P. S. In the later mediæval period the material was often extremely costly, and, referring to the relaxation

## PASTORAL THEOLOGY—PASTOREAUX.

of the times, it was said 'that formerly the church had wooden pastoral staves and golden bishops, but that now the staves are of gold and the bishops of wood.' The workmanship was sometimes extremely beautiful. We annex as a specimen of the highest art the P. S. of William of Wykeham, now in New College, Oxford. This is a sample of the Norman pastoral staff. The Saxon was much less tall. The Irish P. S. is of a type quite peculiar, and some of the sculptured specimens preserved in the British Museum, at the Royal Irish Acad., and elsewhere, are very interesting. St. Fillan's Crosier, now in Edinburgh, resembles these.

**PASTORAL THEOLOGY:** branch of theological science which regards the duties and obligations of Christian pastors in relation to the care of souls. It comprises two parts—first, that which treats of the obligations of the pastors themselves; second, that which comprises the objective teaching to be employed in the instruction and direction of the flock. Numerous works on the subject represent the practice of various sections of the Prot. Church; and more recently Rom. Cath. manuals of P. T. have appeared.

**PASTOREAUX**, n. *pâs-tô-rō'* [F. dim.—from *pastour*, a young shepherd]: in *chh. hist.*, the name given to those persons who took part in certain risings in France in the 13th and 14th c. It is probable that these outbreaks of what Blunt calls 'religious Jacquerie' were due in a large degree to the sufferings of the peasantry from the exactions of the nobility; and that the hostility displayed to the clergy was a consequence of their connection with the aristocracy. The first of these outbreaks took place in Berry 1214. The peasantry pillaged chateaux and religious houses, and proclaimed universal equality and the coming of the Holy Ghost. The second, 1250, had as ostensible objects the rescue of Louis VII. and the recovery of the Holy Sepulchre. It originated in Flanders, under the leadership of a person of unknown name, called the Master of Hungary, who, when he reached Paris, is said to have been at the head of 100,000 men. Here they usurped priestly functions, performed marriages, distributed crosses, offered absolution to those who joined the crusade, and inveighed against the vices of the priesthood. They separated into three divisions, and marched southward, where they were attacked and cut to pieces. The third occurred 1320, in the reign of Philip V., and was under the pretense of a crusade. The insurgents were excommunicated by Pope John XXII.; and being hemmed in in Carcassonne, numbers perished of disease and famine, and the survivors were put to death.



## PASTRY—PASTURE.

PASTRY, n. *pās'trī* [OF. *pastisserie*; F. *pâtisserie*, *pastry*—from *pâte*, paste (see PASTE)]: articles of food made of light puffy dough, as pies, tarts, etc.; in *OE.*, a room in which pasties were made. PASTRY COOK, one who makes pastry or sells it.—*Pastry* comprises articles of food in which the chief part consists of a paste made of flour. This would of course apply to bread, but it has been limited by custom to such lighter articles as are made by the pastry cook, and chiefly to those in which the paste is made to assume a light flaky character by the addition of butter, etc., and by the mode of working it. The commonest kind is made of a dough of flour and water, into which butter or lard is worked by hand, in the proportion of six ounces to the pound. The finest kind is usually termed *puff paste*, and considerable skill is required to make it well, for it depends, next to the goodness of the materials, upon lightness of hand in kneading. The ingredients consist of fine wheat-flour and butter in the proportion of four ounces of butter to a pound of flour, with cold water just sufficient to make a stiff elastic dough; this is rolled out with a *rolling-pin*, and double the previous quantity of butter is then spread over it. It is then rolled up, and lightly kneaded to work the butter in thoroughly. Coolness is very important in making pastry; a marble slab is preferable for making it upon. The thinner it is rolled out before the butter is spread the better, because when it is put in the oven the laminæ, which have been formed by folding or rolling up the butter with the dough, separate by disengagement of the watery vapor, and the thinner and lighter the flakes are the better is the puff paste. In the kind called *short paste*, the flour is made warm, and the butter or lard used is often melted, and a little sugar and an egg or two are added. This, when baked, has not the flakiness of puff paste, but it is better adapted for meat and some other kinds of pies which require to be baked without a dish. Game pies, with elaborately decorated crusts, are made of this pastry.

PAS'TURAGE, in English Law (called Common of Pasture): one of the rights of common, or profits à *prendre*, and the right of one who is not the owner of land to put his sheep or cattle on such land, to feed there: it may be established by prescription—in England of 30 years, in Scotland 40 years.

PASTURE, n. *pās'tūr* [OF. *pasture*; F. *pâturage*, herbage—*from* L. *pastūrā*, pasture—*from* *pastus*, nourished or fed]: land under grass for grazing of cattle; the grass itself: V. to supply with grass or pasture; to graze. PAS'TURING, imp. feeding on grass-land; grazing. PAS'TURED, pp. *-tūrd*. PAS'TURAGE, n. *-tūrāj*, grazing-ground; grass-land for feeding cattle or sheep; grass on which they feed. PAS'TURABLE, a. *-rā-bl*, suited for pasturing. PAS'TURELESS, a. *-tūr-lēs*, destitute of pasture.

## PASTURE.

—A *Pasture* is a field or tract of land allotted to the feeding of oxen, sheep, and other herbivorous animals which eat the grass and other herbage as it grows. The P. is an important portion of the farm; as for from 6 to 10 months of the year, according to the latitude of its location, it supplies a large proportion of the food of these animals. Upon the quantity and quality of the food which it produces the growth and productiveness of the animals kept thereon will largely depend. If the quantity is insufficient or the quality inferior, additional food must be supplied to the animals at the barn or elsewhere. If no P. is provided, the owner of the animals must keep them on dry food, or else, in part at least, adopt the soiling system (see SOILING OF CATTLE). But on most farms the P. is the main, and in many cases the only, source of food for cattle during the summer.

In England, great care is given to making and maintaining pastures, but in the United States they are usually fields from which the forest growth has been removed, but which are otherwise unimproved and receive little attention. There are exceptional cases in which the P. is occasionally alternated with a cultivated field, the former being temporarily given to crops and the latter to pasturage. Where the conditions are favorable, this course is to be commended, but there are large areas of P.-land not adapted to cultivation. In fitting land for P., the sod should be turned, a liberal application of well-rotted manure or commercial fertilizer harrowed in, the surface soil made very fine, and an abundant quantity of seed should be sown. Among the large number of excellent varieties of grass for P. are timothy (*Phleum pratense*), blue grass (*Poa pratensis*), orchard grass (*Dactylis glomerata*), red-top (*Agrostis vulgaris*), fowl meadow grass (*Poa serotina*), and meadow fox-tail (*Alopecurus pratensis*). In localities where they thrive, red clover (*Trifolium pratense*) and white clover (*Trifolium repens*) are valuable additions to the grasses. The mixture of several varieties gives a much better and more enduring P. than can be secured from any one sort grown by itself. It is best to mow the land one season after seeding, in order that the sod may become firm before the cattle are turned upon the field.

Under the ordinary system of management of the P. there will be a gradual exhaustion of the elements of fertility from the soil. This process goes on more slowly where sheep are pastured than where cows are kept, as the latter, being removed from the P. at night, leave much of their manure elsewhere. They also require large quantities of the phosphates for milk production. The P. is liable to deterioration also by the appearance of coarse herbage, weeds, and bushes, and of spots in which the grass has become winter-killed or which by other means have been made unproductive. To prevent these evils, an occasional application of manure or fertilizer is required, and foreign growths should be kept

## PASTY—PATACoon.

down by prompt and frequent mowings. The bare spots, if small, can be harrowed, fertilized, and reseeded; but if they are extensive, or if weeds and bushes are numerous, the whole field should be plowed, manured, and carefully fitted for a permanent feeding-ground. The more promptly remedial measures are taken the less will be the expense involved. Either stable manure, ashes, super-phosphates, or high-grade special fertilizers for pastures, will be found excellent to prevent exhaustion of the soil and to increase productivity. Very close feeding is to be avoided, and it is important that cattle should not be turned upon the P. too early in the spring or be allowed to remain late in the fall.

When the pastures are insufficient, the stock should be fed in part at the barn. On most farms this is necessary during the latter part of the summer. There are various crops which may be profitably grown for this purpose (see FODDER—*Green Fodder*), and cows giving milk may be fed also with moderate quantities of grain. It is necessary to keep the P. inclosed with a substantial fence (see FENCE), and its usefulness will be greatly increased by dividing it into two or more portions and changing the stock occasionally from one field to another. Shade should be provided either by means of trees or sheds, and in every P. there should be abundance of pure water. The latter items are essential to the health and comfort of the animals, and will contribute to the profit which their owner will secure.

PASTY: see under PASTE.

PAT, n. *pät* [a word imitative of the sound of a light blow: Swed. *pjätta*, to pat: F. *patte*, a paw]: a light, quick blow: V. to strike or stroke gently with the fingers; to tap: ADJ. convenient; exactly suitable: AD. at the precise moment; fitly; conveniently. PAT'ING, imp. PAT'ED, pp. *Note*.—PAT, in the sense of 'convenient, exactly suitable,' may be an adaptation of Eng. *apt*. Skeat says this sense is due to a confusion with the Dut. *pas*, Ger. *pass*, fit, convenient, suitable.

PAT, n. *pät* [Gael. *pait*, a lump; *paiteag*, a small lump of butter: or perhaps from the idea of a small soft lump being thrown down]: a small lump of butter made up.

PAT, n. *pät*: a familiar sobriquet of an Irishman, being a corruption of Patrick.

PATACA, n. *pa-tä'ka* [Sp.]: Spanish coin, of the value of about \$1.12; Algerian coin, of the value of about 36 cents.

PATACON, n. *pät-a-kön'* [Sp.]: the unit of value in the Argentine Republic; called also *peso duro*, hard dollar. Originally it was worth \$1.00, but is now represented by paper currency valued at about half that sum. Also a gold coin of Uruguay, worth about \$.965.

PATACoon'. or PATTACoon': same as PATACA

## PATAGONIA.

**PATAGONIA**, *păt-a-gō'nĭ-a*: most southern region of the S. Amer. continent, extending from lat. 39° s. to the Strait of Magellan, which, for 300 m., separates P. from the desolate archipelago of Tierra del Fuego. Length more than 1,000 m., greatest breadth about 480 m.; about 322,550 sq. m. Pop. doubtfully estimated about 20,000. Like the rest of the continent, P. is divided by the Andes into two very unequal and dissimilar territories. Since 1881, nearly the whole country e. of the watershed has been formally recognized as part of the Argentine Republic; while Chili, which previously claimed a considerable share of that area, has contented herself with the country to the w. and a strip along the s. coast. Thus the political in the main agrees with the physical partition.

*Western or Chilian P.* (63,000 sq. m.), comprising the territory of Magellan, is rugged and mountainous. Along the coast, and stretching from 42° s. to the Strait of Magellan, are numerous islands, with precipitous shores, belonging apparently to the system of the Cordilleras. The principal islands are the Chonos Archipelago (q.v.), Wellington Island, Archipelago of Madre de Dios, Queen Adelaide's Archipelago, and Desolation Island. These islands, together with several peninsulas, notably Taytao, form a coast almost as rugged as that of Norway; but in none of them do the mountains rise to the snow-line. Even in the Cordilleras proper, the summits are not so lofty as in the more northern parts; but the following at least are worthy of note—the volcanoes of Minchinmavida (8,000 ft. high) and Corcovado (7,510 ft.), Monte San Valentin (12,697 ft.), Chalten or Fitzroy volcano (7,120 ft.), rising above the Santa Cruz lakes and in more or less active eruption since its discovery 1867, and, finally, Mt. Stokes. The slope of the country from the Andes to the Pacific is so steep, and the strip of shore so narrow, that the largest river of this district has its source only about 13 m. from the coast. In the island of Chiloe, n. of Western P., the mean temperature of winter is about 40°, that of summer rather above 50°; while at Port Famine, 800 m. nearer antarctic latitudes, the mean temperature is not much lower, being in winter about 33°, in summer about 50°. This unusually small difference in the mean temperature of the extremes of Western P. is due to the great dampness of the atmosphere all along the coast. The prevailing winds blow from the w.; heavily charged with moisture from the Pacific Ocean, they strike against the Andes, and cause almost perpetual precipitation from Chiloe to the Strait of Magellan. South of 47° s. lat., hardly a day passes without rain, snow, or sleet. This continual dampness has produced forests of almost tropical luxuriance, which yield valuable timber (alerce, ciprés, Chilian beech, Winter's bark). Coal is mined in the neighborhood of Punta Arenas (Sandy Point), on the e. side of Brunswick Peninsula, opposite the Broad Reach of Magellan's Strait; and here the

## PATAGONIA.

Chilian govt. has, since 1851, a colony and penal settlement; pop. (1882) 1,291.

*Eastern or Argentine P.* consists mainly of high undulating plains or plateaux rising in successive terraces, and frequently intersected by valleys and ravines. These plateaux are covered occasionally with coarse grass, but more frequently with a sparse vegetation of stunted bushes and herbs; even these are sometimes wanting, and elsewhere the surface is strewn with huge bowlders, and again rugged with heaps or ridges of bare, sharp-edged rocks, many of volcanic origin. Keen blasts sweep from various points, but chiefly from the w.; and as this wind has already parted with its moisture on the other side of the mountains, hardly any rain falls in Argentine P. during seven or eight months of the year. The descent from the plains to the valleys is commonly by 'barrancas,' or scarp slopes, varying in depth from 50 to 2 or 3 ft., and in angle from an easy incline to an almost perpendicular precipice. The soil in many places is strongly impregnated with saltpetre, and salt lakes and lagoons are numerous. North of the Rio Chico, and toward the sea-coast, there is a wild, weird, desolate region called by the Indians 'The Devil's Country.' Several wastes of this kind fringe the Atlantic, and formerly induced the belief that P. was a barren and waterless desert; but the interior, though not fertile, really abounds in lagoons, springs, and streams, and the banks of the rivers are capable of cultivation. Along the eastern base of the Andes, also, there is a great tract astonishingly picturesque and fertile, with great forests to which the Indians retire for shelter from the freezing winds of winter. The principal rivers of Argentine P. are Rio Negro (q.v.), the n. boundary; the Chupat, which flows through a good soil, producing pasture and firewood; Rio Deseado; Rio Chico; Santa Cruz; and Rio Gallegos. All these rivers rise in the Andes, and flow e., n.e., and s.e., and several are fed by 'sub-alpine' lakes. One of the head-waters of the Rio Negro flows from Lake Nahuel Huapi (discovered 1690), and the Santa Cruz from Lago Argentino, one of an unrivalled group comprising, besides San Martin, Moreno, and Viedma lakes, several others as yet unexplored. W. of San Martin and Moreno appears the smoking summit of Chalten; and the whole scenery of the district, with rugged mountains rising sheer from the water, with glaciers, snows, and floating icebergs, is unspeakably grand and terrible. Other lakes are Lago Buenos Ayres and Colguape, the latter in the valley of the Sengel, tributary of the Chupat. The whole of Eastern P. has probably been raised above the sea-level in the tertiary period, and its most characteristic geological feature is its boundless expanses of shingle. The flora is in consequence exceptionally poor, and appears to be derived mainly from the lower slopes of the Andes. Herds of horses, dogs, and, in the more favored regions, cattle are bred; pumas and foxes, armadillos, skunks, and tucotucos

## PATAGONIA.

(a peculiar rodent) are seen; and among the birds are condors, hawks, partridges, and flamingoes, ducks and other water-fowl. But by far the most important animals are the Guanaco (q.v.) or huanaca, sometimes in herds of 200 or more, and two species of ostrich (*Rhea Darwinii* and *Rhea Americana*), the mekyush of the Patagonians (see NANDU).

*Inhabitants.*—The pop. of Western P., estimated 1884 by Señor Carvallo at not more than 3,200 (or, including Tierra del Fuego, 4,000), consists of a number of small indigenous nomadic tribes of Araucanian stock who live by fishing and hunting; and the settlers at Punta Arenas or Magellan's colony, mainly immigrants from Chiloe (Chilotes) and other parts of Chili. The state of matters in Eastern P. is too transitional to allow of satisfactory calculation of the number of inhabitants. The Argentine authorities have since 1881 driven considerable bodies of troublesome Indians (Puelche) from the Pampas southward across the Rio Negro; Argentine herdsmen are beginning to pasture their cattle in the n. valleys, and Chilian immigrants are said to be rapidly moving east. The Patagonians proper, or Tehuelche Indians, who are confined to Eastern P., number perhaps about 7,000. They are generally divided into two great tribes, the n. and the s., which speak the same language, but are distinguishable by difference of accent; but Pikehoehe, the Patagonian examined by the Ethnographical Soc. in Berlin 1879, reported the existence of seven distinct tribes—Tölken, Kholpen, Lalamitch, Ankatch, Eiré, Tokker, Haveniken. The northern tribes range chiefly over the district between the Cordillera and the Atlantic, from the Rio Negro to the Chupat, and even the Santa Cruz river. The southern, who appear taller and finer, and are more expert hunters, occupy the rest of P. as far s. as the Strait of Magellan. The two divisions are much intermixed, and frequently intermarry. Though the extravagant statements by some as to the gigantic stature of the Patagonians have led others to deny their claim to be considered exceptional, there is no doubt that they are one of the tallest races on the globe. The average height of the male members of Musters's party was rather over 5 ft. 10 inches; two others, measured at Santa Cruz, stood 6 ft. 4 inches each; Pikehoehe was 5 ft. 9 inches high, and stretched 5 ft. 11 inches with his arms. The muscular development of the arms and chest is extraordinary, and in general the body is well proportioned. The Patagonians are excellent swimmers, can walk great distances and for two and even three days together without being tired. Their cranial characteristics are somewhat disguised by the fact that the hinder part of the skull is artificially flattened, the custom being to strap the child's head back to a board to prevent it 'wagging' when carried about the country on horseback. This process, however, appears only to confirm and exaggerate a natural tendency; and it is asserted by the most scientific investigators (Virehow

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and others) that the Patagonian skull is, next to that of the Lapps, the shortest in the world, or nearest the type of the chimpanzee. The jaws are powerful, though with no trace of prognathism, and give a leonine cast to the countenance. The expression of the face is ordinarily good-humored though serious, except in the settlements: their eyes are dark brown, bright and intelligent, their noses aquiline and well formed, their foreheads open and prominent. The complexion of the men, when cleansed from paint, is reddish or rather yellowish brown. Thick flowing masses of long, coarse, black, glossy hair cover their heads, and are combed out by their wives at least once a day. The scanty natural growth of beard, mustaches, and even eyebrows, is carefully eradicated. The young women are frequently good-looking, displaying healthy, ruddy cheeks when not disguised with paint. The dress of the men consists of a *chiripa* or under-garment round the loins; a long mantle of hide with the fur inside, and drooping from their shoulders to the ground; and 'potro' boots or buskins made from the skin of a horse's hock, and occasionally from the leg of a large puma. The dress of the women is similar, except that the under-garment is made of calico or stuff, and extends from the shoulders to the ankle. Both sexes are fond of ornaments, wearing huge ear-rings of square shape, suspended from small rings passing through the lobe of the ear; also silver or blue-bead necklaces. The weapons of the Tehuelches consist of gun or revolver; sword or dagger; a long, heavy lance; and the *bola perdida*, or single ball, so called because, once thrown from the sling, it is not picked up again.

Their *toldos*, or tents, capable of holding about 25 persons, are formed of three rows of stakes driven into the ground. The middle row is higher than the others, and the three rows are tied together with strings of hide. This framework is covered with hides which reach the ground on all sides, and are fastened to it by small stakes of bone. At nightfall, guanaco hides are spread on the ground within the tents, and the men and women, laying aside their mantle, or using it as a blanket, go to sleep in the same apartment. Men, women, and children bathe in cold water every morning throughout the year; and though this may not free them from vermin, yet it prevents disease, and hardens them against the severities of winter. Besides mantles of guanaco hide, their only manufactures are saddles, bridles, stirrups, and lassos, which often evince wonderful ingenuity and nicety of execution.

The Patagonians believe in a great and good spirit who created the Indians and animals, and who dispersed them from a place which they call 'God's Hill,' but takes no concern with the beings whom he has created. Idols are unknown, and Musters saw no trace of any periodic religious festival. Whatever religious acts the natives performed were prompted by dread of demons, the chief of whom, Gualichu, is always on the watch to cause mis-

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chief. To propitiate or drive away this spirit is the function of the wizard, who (as in other countries) combines the medical and magical arts. The Gualichu is invisible (except to the 'doctor,' who has the gift of second-sight), and he can enter into the bodies of people, and cause sickness and disease of every sort. Many other evil spirits are supposed to inhabit subterranean dwellings, and are saluted on occasion with special incantations. The cry of the night-jar on the Cordillera betokens sickness or death, a certain toad-like lizard mysteriously lames horses, a fabulous two-headed guanaco is a sure forerunner of epidemic disease, etc. Charms and talismans are liberally employed.

Kindly, good-tempered, impulsive children of nature, the Tehuelche take great likes or dislikes, becoming firm friends or equally confirmed enemies. They are steadily decreasing, through the combined effect of disease and bad liquor supplied by traders, and before long the race will be extirpated. The language is quite different from either Pampa or Araucanian. Of European settlements there are few in Argentine P. The oldest, Patagones (formerly El Carmen), really lies on the n. side of the Rio Negro, about 18 m. from its mouth; pop. about 2,000, Spanish and other settlers, negroes, and convicts from Buenos Ayres. In the valley of the Chupat is a Welsh colony dating from 1865, numbering (1884) about 6,000; and at the mouth of the Santa Cruz, farther s., there is a petty station. The settlement of the dispute between the Argentine Republic and Chili is expected to give a stimulus to colonization.

*History.*—Magellan, before passing through the strait, had in 1520 sailed along the whole Patagonian coast; and it was from the large footsteps (*patagones*) observed near his winter quarters at S. Julian that the country derived its name. The great plain was traversed by Rodrigo de Isla 1535. Sarmiento de Gambo (commemorated by the mountain in Tierra del Fuego) added greatly to the knowledge of the w. and s. (1579–80), and at Nombre de Dios and San Felipe (Port Famine) founded Spanish settlements, doomed to early extinction. English interest in the country, aroused by Drake's voyage 1577, was kept up by Davis, Narborough, Byron, Wallis, and the Jesuit Falkner; and at last the beginning of a real and scientific acquaintance with the interior was made by King, Fitzroy, Darwin, and Musters. Since 1870 careful explorations have been made by Moreno, Lista, Moyano, and other Argentine travellers.

English works on P. are Falkner's (1774). Snow's (1857), Musters's (1871), Beerbohm's (1878), Lady Florence Dixie's (1880), and Coan's (1880).

PATAGONIAN, a. *păt'ă-gō'nĭ-ăn*: a native of *Patagonia*, S. America.

PÂTÂLA, *pâ-tâ'la* [from *pat*, fall]: in Hindu mythology, name of those inferior regions which have seven, or, according to some, eight divisions, each extending downward 10,000 *yojanas*, or miles. The soil of these regions,



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as the *Vishn'u-Purân'a* relates, is severally white, black, purple, yellow, sandy, stony, and of gold; they are embellished with magnificent palaces, in which dwell numerous Dânavas, Daityas, Yakshas, and great snake-gods, decorated with brilliant jewels, and happy in the enjoyment of delicious viands and strong wines. There are in these regions beautiful groves, and streams and lakes, where the lotus blows, and the skies are resonant with the *kokila's* songs. They are so delightful, that the saint Narada, after his return from them to heaven, declared 'among the celestials that P. was much more delightful than Indra's heaven. Prof. Wilson, in his *Vishn'u-Purân'a*, says 'that there is no very copious description of P. in any of the *Purân'as*; that the most circumstantial are those of the *Vâyû* and *Bhâgavata Purân'as*; and that the *Mahâbhârata* and these two *Purân'as* assign different divisions to the Dânavas, Daityas, and Nâgas. . . . The regions of the P. and their inhabitants are oftener the subjects of profane than of sacred fiction, in consequence of the frequent intercourse between mortal heroes and the serpent-maids. A considerable section of the *Vr'ihat-Kathâ* consists of adventures and events in this subterraneous world.' For inferior regions of a different sort, see NARAKA.

PATANJALI: name of two celebrated authors of anc. India, generally deemed the same personage, though apparently for no other reason than that they bear the same name. The one is author of the system of philosophy called Yoga (q.v.), the other the great critic of Kâtyâyana (q.v.) and Pân'ini (q.v.).—Of the former, nothing is known beyond his work—for which see YOGA.—The few historical facts relating to the latter, as at present ascertained, may be gathered from his great work, *Mahâbhâshya*, or 'the great commentary.' The name of his mother was Gon'ikâ; his birthplace was Gonarda, in e. India, and he resided temporarily in Cashmere, where his work was especially patronized. From circumstantial evidence, Prof. Goldstücker has, moreover, proved that he wrote between B.C. 140 and 120 (*Pân'ini, his Place in Sanskrit Literature*, 235, ff.). The *Mahâbhâshya* of P. is not a full commentary on Pân'ini, but, with a few exceptions, only a commentary on the Vârttikas, or critical remarks of Kâtyâyana on Pân'ini. P. being the third of the grammatical triad of India (see PÂN'INI), therefore, having the advantage of profiting by the scholarship of his predecessors, is esteemed a paramount authority in classical Sanskrit grammar; and justly, for in learning, irgenuity, and conscientiousness, no grammatical author of India can be held superior to him. The *Mahâbhâshya* has been commented on by Kaiyyat'a, in a work called *Bhâshya-Pradîpa*; and the latter has been annotated by Nagojibhatta, in the *Bhâshya-pradîpodyota*. So much of these three latter works as relates to the first chapter of the first book of Pân'ini, together with the Vârttikas connected with them, was ed. at Mirzapore 1856, by the late Dr. J. R. Ballantyne.

## PATAPSCO—PATCHOULI.

**PATAPSCO**, *pa-tăps'kō*, RIVER: in Md.; rising on the n. boundary of the state, and flowing s.e. 80 m. to Chesapeake Bay, 14 m. s. of Baltimore, to which city it is navigable. Its falls furnish water-power to factories.

**PATARINI**, or **PATERINI**, *păt-é-rī'nī* (or **PAT'ARINES**, **PAT'ERINES**, **PATERENI**, **PATERELLI**, **PATARÆI**): mediæval sect opposed to the marriage of priests; dating from the 11th c. The name came to be applied to the Cathari, who opposed all marriage. The designation is traced to Pataria, the ragmen's quarters of Milan (*pates*, provincial for rag), where adherents of the party were accustomed to meet, under the leadership of Arialdus, a deacon.

**PATCH**, n. *păch* [Swiss, *batsch*, the sound of a blow, a patch; *batschen*, to clap on a piece: Gael. *baid*, a rag: It. *pezza*, a piece of rag]: a piece of cloth sewed on to cover a defect or hole; a piece in variegated needlework; a detached piece; a small piece of black plaster formerly placed on the face as an ornament; a plot of ground; in *OE.*, a mean, paltry fellow: V. to mend with a patch or patches; to repair clumsily; to make up of pieces; to make or complete suddenly—followed by *up*, as, to *patch up* a peace. **PATCH'ING**, imp.: N. act of one who patches. **PATCHED**, pp. *păcht*: **ADJ.** mended with a patch or patches. **PATCH'ER**, n. *-ér*, one who patches. **PATCH'WORK**, work formed of pieces sewed together; any parts joined together clumsily. *Note.*—Skeat prefers a derivation from Low Ger. *plakke*, a spot, a piece, a patch, O. Dut. *placken*, to strike, to plaster, to spot, and says the etymology is obscured by the loss of *l*, which is still retained in Scot. *platch*, a large spot, a patch.

**PATCH**, n. *păch* [Gael. *pait*, a hump, an excrescence]: in *OE.*, a personal deformity, as a hunch or hump; an opprobrious name expressive of ugliness real or supposed, as, she is 'a cross *patch*.' **PATCHOKE**, n. *păch'ōk*, and **ПАЖОК**, n. *păj'ōk*, in *OE.*, a little deformed patch. *Note.*—This word, however, may really be connected with **PATCH** 1, in the sense of the person made up of rags and patches.

**PATCHOULI**, or **PATCHOULY**, n. *pă-chô'lı* [E. Indian word: Malay, *pucha-pat*]: wild plant of India; also the perfume which it yields. The perfume is derived from the dried branches of *Pogostemon Patchouli* (nat. order *Labiatae*), introduced into Britain and the west as an article of merchandise 1844. The plant is a native of Silhet, the Malay coast, Ceylon, Java, and the neighborhood of Bombay; probably also of China; but owing to the fondness of Asiatics for its perfume, it is difficult to say where it is native or cultivated. Every part of the plant is odoriferous, but the younger portions of the branches with leaves are chosen—usually about 12 inches long. The odor is peculiar and difficult to define, but has a slight resemblance to sandal-wood; it is very powerful, and to many persons extremely disagreeable.

## PATE—PATELLA.

The odor was known in Europe before the material itself was introduced, through its use in Cashmere to scent the shawls for keeping out moths, which are averse to it; hence the genuine Cashmere shawls were known by their scent, until the French found the secret, and imported the herb for similar use. It is used in India as an ingredient in fancy tobaccos, and as a perfume for the hair; and is prized for keeping insects from linen and woolen articles. The essence of P. is a peculiar heavy brown oil with disagreeably powerful odor; it is obtained by distillation, and requires extreme dilution for perfumery purposes.

PATE, n. *pāt* [OF. *pate*, a plate or band of iron; Ger. *platte*, a plate, a bald pate, a head: mid. L. *platta*, the clerical tonsure from ear to ear]: the brain-pan; the head. PA'TED, a. having a pate, in composition only, as *long-pated*. Note.—The origin of PATE is disguised by the loss of the *l*: OF. *pate* is probably derived from Ger. *platte*. We have Ir. *plata*, a plate; *plait*, the forehead.

PATE, n. *pâ'tā* [F. *pâte*, a pasty]: in *fort.*, a kind of platform, usually of a roundish shape, erected on marshy ground to cover a gate.

PÂTÉ DE FOIE GRAS, *pâ-tā' dēh fwâ grâ* [F., pie of liver fat]: baked preparation of abnormally fattened liver of goose (sometimes duck), seasoned, and usually compounded with truffles. It is made mostly at Strasbourg and Toulouse, France. The geese are kept confined, commonly in the dark, and fed with beans or maize; after 3 weeks, oil of poppy is added, and, 'to prevent corruption,' burned bread in water; sometimes, farina flour and antimony are used. At last, food is forced down the throat of the overfed animal, which can hardly respire. The liver attains the weight of 1 or 2 lbs., and is reported at even 2 kilograms. The inhuman trade is said to amount, at Strasbourg, to half a million of dollars annually.

PATEE, n., or PATTEE, n. *pă-tē'* [F. *patté*—from *patte*, a paw]: in *her.*, a small cross with the arms widening toward the ends, and flat at their outer edges; called also *Cross Formée*.



PATELLA, n. *pă-těl'lă* [L. *patella*, a small pan: It. *padella*, a frying-pan; *patella*, the knee-pan]: in *anat.*, the knee-pan, or cap of the knee (see below): the Limpet (q.v.): a small vase: in *bot.*, an orbicular sessile apothecium of a lichen, with a marginal rim distinct from the thallus. PATEL'LIFORM, a. *-lî-fawrm* [L. *forma*, a shape]: in the form of a small dish or saucer; knee-pan-shaped. PATELLA and PATEL-LIDÆ: see LIMPET.

PATEL'LA, or KNEE'-CAP: a Sesamoid Bone (q.v.), developed in the single tendon of the *rectus, vastus externus*, and *vastus internus* muscles—the greater extensor muscles of the leg. It is heart-shaped in form, the broad end

## PATELLA.

directed upward, and the apex downward. The anterior or external surface is convex, perforated by small apertures for entrance of vessels, and marked by rough longitudinal striæ; while the posterior or internal surface is smooth and divided into two facets by a vertical ridge, which corresponds and fits into the groove on the lower articulating surface of the femur or thigh-bone; while the two facets (of which the outer is the broader and deeper) correspond to the articular surface of the two condyles.

This bone is liable both to dislocation and to fracture.

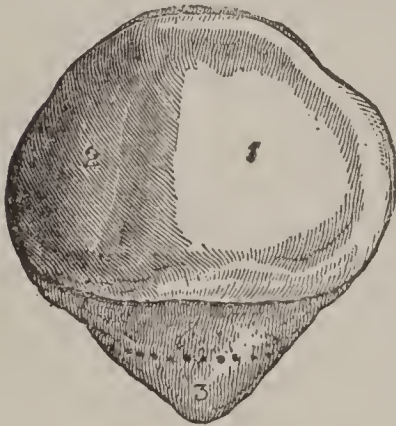


Fig. 1. — Posterior surface of right Patella:

1, outer facet; 2, inner facet; 3, surface to which the ligamentum patellæ is attached.

P. may (like dislocation) be caused either by muscular action or by mechanical violence.

Fracture by muscular action is the more common of

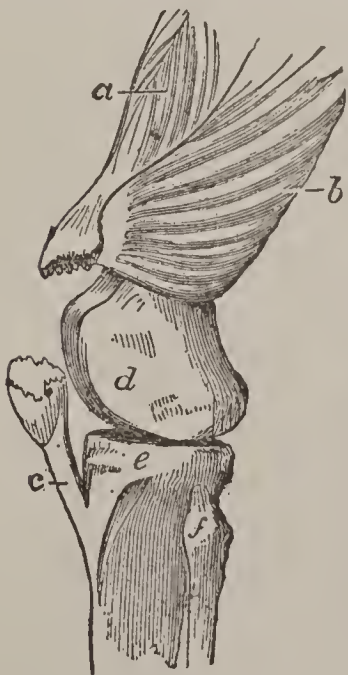


Fig. 2.

a, rectus muscle; b, vastus externus muscle; c, ligamentum patellæ; d, external condyle of right femur; e, head of tibia; f, head of fibula.

amentous union or in no true union at all.

Dislocation may occur either inward or outward; but it is most frequent outward. The displacement may be caused either by mechanical violence, or by too sudden contraction of the extensor muscles in whose conjoined tendon it lies; and is most liable to occur in knock-kneed, flabby persons. It may be readily detected by the impossibility of bending the knee, and by the bone being felt in its new position; and, except in one rare variety, the dislocation is capable of being reduced without difficulty. Fracture of the

P. may (like dislocation) be caused either by muscular action or by mechanical violence. Fracture by muscular action is the more common of the two forms, and occurs thus: A person in danger of falling forward attempts to recover himself by throwing the body backward, and the violent action of the extensors (chiefly the *rectus*) snaps the P. across, the upper fragment being drawn up the thigh, while the lower portion is retained *in situ* by that portion of the common tendon which is continued from the P. to the tubercle of the tibia, and which is called the ligamentum patellæ. The treatment consists in relaxing the opposing muscles by raising the trunk, and slightly elevating the limb, which should be kept in a straight position. Because of the great difficulty of bringing the broken surfaces into exact apposition, as may be readily understood from the accompanying figure, it is very difficult to obtain bony union of the parts, and the case generally results either in mere lig-

## PATEN—PATENT OFFICE.

**PATEN**, n. *pät'ën*, or **PATIN**, n. *pät'in* [OF. *patene*, the paten or cover of a chalice—from mid. L. *patena*, the paten in the Eucharist—from L. *patīna*, a wide shallow basin: It. *patena*]: in general, a plate or sheet, as *patens* of bright gold. P., in *eccles.*, is the plate employed for the element of bread in the eucharistic service. Anciently it was of considerable size; and while the practice of the OFFERTORY (q.v.) continued, there was a special P. for the bread-offering. In the Rom. Cath. Church, in which the unleavened wafer-bread is used, and the communion is distributed from a distinct vessel called PYX (q.v.), the P. is a small circular plate, always of the same material with the chalice, and often richly chased or carved, and studded with precious stones. It is used only in the mass.

**PATENT**, a. *pät'ënt* or *pät'tënt* [F. *patent*, patent, evident—from L. *patens* or *paten'tem*, lying open: It. *patente*]: open; unconcealed; open to the perusal of all; protected by special privilege, as by *letters patent*: in *bot.*, spreading widely; expanded: N. a writ from the govt., so called from its being *open* to the perusal of all, and conferring a certain exclusive right or privilege—e.g. (in monarchical countries), a title of nobility; or (in general) the possession or use of a certain territory, or the sole right to a new invention or discovery for a certain time (see PATENTS, LAW OF: PATENT OFFICE): V. to secure by patent. PAT'ENTING, imp. PAT'ENTED, pp. PAT'ENT-ABLE, a. -*ä-bl*, that may be secured or protected by patent. PATENTEE, n. *pät'ën-tē'*, one to whom a certain privilege is secured by law. PATENT MEDICINE, medicine the composition of which is a secret, and the right of sale limited by govt. sanction to the proprietor. PATENT OFFICE, govt. office for issuing patents (see PATENT OFFICE). PATENT RIGHT, an exclusive right to the use of an invention, conferred by govt. for a certain term of years. PATENT ROLLS, records or registers of patents. PATENT-YELLOW, pigment or paint composed of oxide and chloride of lead. LETTERS PATENT: see PATENTS, LAW OF: LETTER.

**PATENT OFFICE**, *pät'ënt öffis*: bureau or dept. of government at Washington, instituted for the granting of letters patent for inventions. In the United States the patent office is a branch of the dept. of the interior; its head is styled commissioner of patents. The commissioner, the assistant-commissioner, and the three examiners-in-chief are appointed by the pres., with the advice and consent of the senate: the other officials are appointed by the sec. of the interior, on the nomination of the commissioner; these subordinate officials are: chief clerk, examiner of 'interferences,' examiner of trade-marks, 24 principal examiners, 24 first, 24 second, and 24 third asst.-examiners, librarian, machinist, 3 draughtsmen, 35 copyists of drawings, 16 attendants in the model-room, examiner of designs: the salaries of these officials amount to a little more than \$500,000, and the

## PATENT OFFICE.

commissioner's salary is \$5,000. The patent office is self-supporting, and yields a surplus of profit annually. Many of the records, models, etc., of the patent office at Washington were destroyed by fire 1836. In 1837 was laid the corner-stone of the Interior Dept. building, commonly called the Patent Office building, as its space is largely given to the uses of that office. The building, finished 1860, covers 2 squares, between 7th and 9th streets, with wings, façades, and porticoes of white marble in Doric style; cost, \$3,000,000. Total number of patents granted 1837-89 was 449,928 (not including 'additional improvements' on original patents, reissues, or 'design patents'); total number of applications for patents 702,382. The number issued in the first decade (1837-46) was 5,019; (1847-56) 12,578; (1857-66) 44,334; (1867-76) 125,155; (1877-86) 169,478. The number of applications for patents, designs, etc. (1895) was 45,513; number of patents 22,057; designs, trade-marks, etc., 1,832; total, 23,889; the receipts of the office for the year were \$1,245,247; and the expenditures, \$1,084,496; receipts over expenditures \$160,750; number of patents granted, 1901, 27,373.

An application for letters patent is to be addressed to the commissioner of patents; it must be accompanied by a written description of the device, etc., on which a patent is asked, and of the manner and process of making or producing it, expressed in terms so clear and unambiguous that they shall fully describe this process, etc., and no other; in particular the specific peculiarity of the invention in hand must be pointed out. In case drawings or models, or both, are deemed necessary, the commissioner may require the applicant to furnish them. On the filing of the application, duly attested, and payment of the lawful fee, the claim is submitted to the examiners, and, if their report is favorable, letters patent are issued in the name of the United States, under the seal of the patent office. The fees are: on filing an original application for a patent, \$15; on issuing each original patent, \$20; fee of attorney (if employed), \$25. On designs, patents are granted for 3½ yrs., 7 yrs., and 14 yrs., the fees being \$10, \$15, and \$30 respectively. The fee on filing a caveat is \$10; for an application for reissue, \$30. The law does not require the petitioner for a patent to employ an attorney; he may, if he choose, draw up all the papers himself, and present them to the patent office; but by taking counsel of an expert in patent law many mistakes and delays may be avoided. In many cases of complicated mechanism, involving elaborate drawings, also in cases of disputed priority of invention, the cost very greatly exceeds that mentioned above as the minimum. The *Gazette of the United States Patent Office* is a weekly publication of abt. 200 folio pages, containing the specifications of all patented articles and devices, designs, etc., with diagrams, figures, etc.; it is also a record of registered trade-marks.—See PATENTS, LAW OF.

In England, in accordance with the law of 1852, all

## PATENTS.

the specifications of patents from the earliest date were examined, and minutely classified according to their contents. The patents 1711–1852 were found to amount to 12,977; and the specifications of the whole of these were printed between 1853–58. The whole fill many hundred quarto vols., with the lithographed illustrations bound in separate folio vols. The next work was to utilize this immense collection by a thorough system of indexing. Three indexes were prepared—*Chronological*, *Alphabetical* (according to the names of the inventors), and *Subject-matter*. Arrangements were at the same time made for printing and indexing the specifications of all patents obtained under the new law. These specifications are sold to the public at the price of paper and print. In 1871 the plan was adopted of publishing weekly abridgments of the specifications of new patents; dispensing with any further alphabetical and subject-matter indexes. Besides this, abridgments have been drawn up of most of the specifications, and will be eventually of all; setting forth, in few words, the general nature of the invention. These abridgments are collected into 12mo vols., one or more to each class of subjects; and the vols. are sold at 6*d.* to 10*s.* each, according to their bulk. At the end of 1878, there were 115 vols. of these useful works, relating to no less than 94 groups or classes of abridgments. By reference to one of these handy vols., or to the *Subject-matter* index, an inventor can see whether any person has preceded him in the particular subject for which he desires a patent.

The commissioners having come into possession, by gift and otherwise, of several models illustrating patented inventions, and having no place to deposit them for preservation and exhibition, an arrangement was made with the authorities at South Kensington, London, for the reception of these models; and, greatly augmented by specimens, drawings, diagrams, and portraits, the Patent Museum now occupies a site adjacent to the South Kensington Museum.

PATENTS, LAW OF: body of customary or of statute law regulating the grant to an individual by govt., in letters *patent* or open (whence the name), of the exclusive right to manufacture and sell a chattel or article of commerce to which he has a claim by reason of invention. In the common law of England, a patent originally was a written instrument emanating from the king, sealed with the great seal, and conferring grants of lands, honors, franchises, or monopolies. Thus, exclusive right to deal in certain commodities, e.g., salt, was conferred on individuals, either gratis as a royal favor, or for a fixed percentage of the profits, or even for a sum in hand. In Magna Charta the king's power of granting such monopolies was to some extent restricted, and the parliament subsequently placed further restrictions on the exercise of this prerogative by the crown. Nevertheless, monopolies continued to be granted until the

## PATENTS.

21st year of James I. (1623), when the 'statute of monopolies' was enacted, totally prohibiting all grants of monopoly rights so far as traffic in commodities already known was concerned; but at the same time the king was permitted to grant to the inventor of any new manufacture the exclusive right of making and selling it for not exceeding 14 yrs. That act may be regarded as the beginning of legislation on what are now known as patent rights.

Prior to independence, the govts. of the British colonies in N. America sometimes granted letters patent to inventors: this was done by the Mass. general court 1641; a statute of Conn. provided for granting patents 1652. The 8th sec. of Art. I. of the U. S. constitution concedes to congress power 'to promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries.' This is the basis of all our laws of copyright and patent. See COPYRIGHT. Congress enacted the law establishing the patent office 1790; it has since been many times supplemented and amended, then annulled and superseded by new statutes. At present the law provides for the granting of letters patent to the first discoverer or inventor of any new and useful art, machine, manufacture, or composition of matter, or of any new and useful improvement of an existing art, machine, etc., if such invention or discovery has not been known or used by others in this country, nor been patented abroad, nor described in any printed publication in this or any foreign country before his invention or discovery, nor 'been in public use or on sale for more than 2 yrs. before the date of the application.' The law does not cover discoveries of scientific theories or philosophical principles, or of laws of nature, but only the reduction of these to practice, and their embodiment in a particular structure or combination of parts. The invention must be *useful*, i.e., promotive of beneficial ends, as distinguished from ends that are trivial, or contrary to the general welfare. A mere application of an old device or of an already existent material that involves no new device, or manufacture, or combination of materials, is not patentable: thus, if one cuts common writing-paper into the form of a shirt-collar, the result is not patentable; but if he contrives a new machine for cutting paper into shapes suitable for collars, or one for molding paper-pulp into such shapes, his contrivance may be patented. The inventor of a device that has been patented in a foreign country may obtain a like patent in the United States, provided the device 'shall not have been introduced into public use here for more than 2 yrs. prior to the application' for a patent; such patent expires at the expiry of the foreign patent, or, if there be more than one, then at the same time with the one that has the shortest time to run; no such patent runs for a longer term than 17 yrs.

An inventor may enter at the patent office a 'caveat'—



## PATENTS.

a statement or description of his invention—and that will give him for one year prior right to a patent over any other applicant for letters patent on the same subject-matter. The caveat is a confidential communication to the patent office. The petition for a patent must describe clearly and fully the nature of the invention, its different parts, its features of novelty, etc. Whenever drawings or models are of use for a full description, they must be entered with the petition. The petitioner is entitled to a patent on proving himself to be the original author of the invention, with this one proviso, that he has not, either actually or constructively, abandoned his invention to the public. The law provides for renewed application when a patent is denied by the commissioner, and gives the right of presenting an amended petition. When an unintentional error exists in the specification of a patent, whereby it is rendered wholly or partially invalid, a new patent may be issued; this expires when the original paper would have expired. The life of a patent extends through 17 years, and it is not renewable except by act of congress. The article patented must bear the word 'patented,' with day and year of grant of patent, either stamped or affixed to itself, or, when that is not practicable, upon an envelope containing it, etc.; a penalty attaches to the use of such stamp or label where no patent has been granted. Damages for infringement are recoverable in any circuit court of the United States, but actual damages only can be recovered, not exemplary, vindictive, or punitive. The letters patent do not guarantee the validity of the title conferred on the patentee; but they are *prima facie* evidence of validity. The law makes no provision for the annulment of a patent, however invalid it may prove; but a recent judgment of the federal supreme court shows the proper remedy in such case to be a suit by the atty.gen. on *the relation* of the party interested. See PATENT OFFICE.

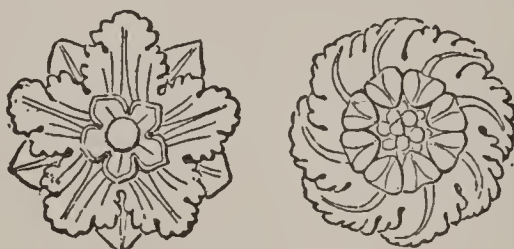
In Great Britain, since 1883, the Law of Patents has been greatly simplified. The new responsible official, the comptroller of patents, is an officer of the board of trade—from whose decisions there is in certain cases an appeal to a court comprising some of the chief law officers of the crown. There is a paid examiner of patents, to whom applications are first submitted. One application suffices, and that may be sent through the mail. Charges under the new law are: £1 paid at once, when the provisional specification is lodged at the patent office; £3 more after nine months, when the final specification is passed by the comptroller, and sealed; £50 after the fourth year; and £100 after the ninth. The latter two payments may be in annual instalments. The present law allows the inventor a monopoly of his invention for 14 years, with privilege at the end of that time—if he has not been sufficiently remunerated—to have the patent renewed for a further term of 14 years. British patents are valid only in the home jurisdictions; nearly all the colonies have patent laws of their own. The life

## PATERA—PATERNO.

of a patent is 15 yrs. in Canada, France, Austria, Italy, Portugal, Sweden, Brazil; 20 yrs. in Belgium; 10 yrs. in Norway and Russia. The conditions of obtaining a patent vary widely in the different countries: for details, see Johnson's *Patentee's Manual*, an Eng. publication.

PATER, *pā'tér*, WALTER HENRY; 1839—1894, July 30; b. London: author and art critic. He graduated at Oxford, 1862; was elected fellow of Brasenose college, 1862; at his death was dean and lecturer of the same. His chief works were *The Renaissance* (1873); and later *Marius the Epicurean*, and *Imaginary Portraits*. He wrote also numerous essays. He was of the school whose motto is "art for art's sake" to the exclusion of moral purpose.

PATERA, *păt'ê-râ* [L.]: round dish, imitations of which were carved by the Romans in the panels of ceilings, etc.



Patera.

The name is applied also to the foliated ornaments used in the same position.

PATERCULUS, *pa-tér'kū-lūs*, C. VELLEIUS: Roman historian: born about B.C. 19; died after A.D. 30. He served under Tiberius as prefect or legate in Germany, Pannonia, and Dalmatia; and A.D. 14 was appointed prætor. P.'s claim to remembrance is his *Historiæ Romanæ*, a compendium of universal, but particularly of Roman, history, in two books. The work, as we have it, is not complete; the beginning, and a portion following the 8th chapter, are lacking. The work is, on the whole, impartial and discriminating; its style is based on that of Sallust. The *editio princeps* appeared at Basel 1520.

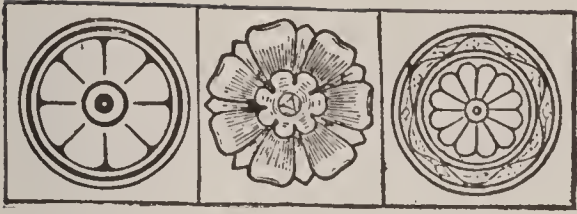
PATEREROS, *păt-ê-rê'rôs*: small pieces of ordnance, now obsolete, worked on swivels; commonly used on board ships, where, mounted on the gunwale, they discharged showers of old nails, etc., into hostile boats.

PATERFAMILIAS, n. *pā'tér-fă-mīl'ĩ-ās* [L.—from *pater*, a father; *familiă*, a household, a family]: the familiar name for a male parent or master of a family—the mother being called *materfamilias*.

PATERINI (PAT'ERINES): see PATARINI.

PATERNAL, a. *pă-tér'năl* [F. *paternel*, fatherly—from mid. L. *paternālis*—from L. *pater*, a father: It. *paternale*]: pertaining to or derived from a father; fatherly; hereditary. PATER'NALLY, ad. -*lĩ*. PATER'NITY, n. -*nĩ-tĩ*, the relation or condition of a father; fathership.

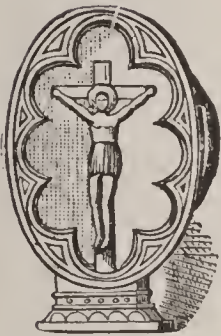
PATERNO, *pá-tér'nō* (anc. *Hybla Major*): town of Catania, Sicily, 11 m. n.w. from Catania. Pop. 15,000.



Architectural Pateræ.



Pavilion.



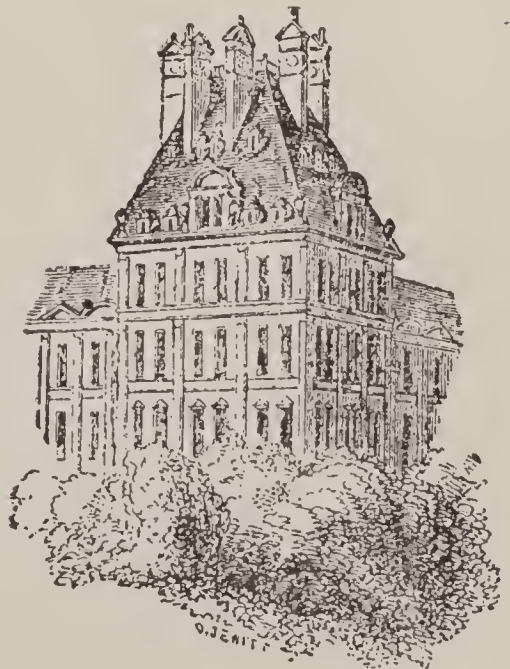
Pax.



Grecian Patera.



Pax.—Brass of 15th century.



Pavilion of Flora, Tuileries, Paris.

## PATERNOSTER—PATERNOSTER ROW.

PATERNOSTER, n. *păt'ér-nös'tér* or *păt'ér-* [L. *pater*, father; *noster*, our]: the LORD'S PRAYER, in its Latin name; short form of prayer prescribed by the Lord Jesus to his disciples (Matt. vi. 9-13; Luke xi. 1-4) as the model according to which, in contrast with the prayers of the Pharisees and of the heathen, they were to pray. *The Lord's Prayer* (its Latin name is not used by Protestants) has been accepted as, by excellence, the form of Christian prayer. It had a place in all the ancient liturgies. So sacred, indeed, was the use of the P., that it was reserved from pagans and catechumens under what is known as the Discipline of the Secret. The early fathers—Origen, Tertullian, Cyprian—refer to it in terms which show that even then it was a recognized form of private prayer. It was recited in baptism, and one of the privileges of the baptized was the use of the P. More than one of the Fathers, and very many later writers, have devoted special treatises to the exposition of this prayer, as embracing all the fitting and legitimate objects of the prayer of a Christian. The Catechism of the Council of Trent contains a detailed exposition and commentary of it, and in all the services, not only of the Roman Missal, Breviary, Ritual, Processional, and Ordinal, but in all the occasional services prescribed from time to time, it is invariably introduced. In the Rosary (q.v.) of the Virgin Mary, it is combined with the Hail Mary; whence the larger beads of the 'Rosary' are sometimes called *Paternosters*, and the name is applied sometimes to the whole Rosary. Perhaps the most usual of the shorter devotions among Rom. Catholics is the recitation of the 'Pater,' with one or more 'Ave Marias,' concluding with the Doxology. The P. as commonly used by Protestants concludes with the clause, 'for Thine is the kingdom, and the power, and the glory for ever [and ever]. Amen.' This clause is not used by Rom. Catholics. Of the two gospels—of Matthew and of Luke—in which the prayer is contained, that of Luke has not this clause; and even in the Gospel of Matthew the clause is found only in the later MSS., in which it cannot be doubted that it is a modern interpolation. It was retained, however, in Luther's German translation and in the Authorized English Version, whence its use has become common among Protestants. Many polyglot collections of the P. have been published since the 16th c., the most remarkable of which are those of John Chamberlayne in 150 languages (1715), of Conrad Gesner in 200 (1748), and of Padre Hervaz in 307 (1787).

PATERNOSTER ROW: street in London, near St. Paul's Cathedral; occupied principally by booksellers.

## PATERSON.

PATERSON, *păt'ér-son*: city, cap. of Passaic co., N. J.; third in size and importance in the state; on the Passaic river 5 m. above the head of natural navigation, 16 m. n.w. of New York, 13 m. n. of Newark. It has exceptional railroad facilities, by the New York Lake Erie and Western directly through the city, with 50 trains a day each way, the New York Susquehanna and Western skirting the e. boundary, and the Del. Lackawanna and Western skirting the w. boundary, each of them with a spur into the heart of the city; and from such competition of three roads has very low freight and commutation passenger rates. The Morris and Essex canal, from Easton, Penn., to Jersey City, gives it connection with the Delaware river. Surveys have been made by the U. S. govt., and plans matured by the P. board of trade, for extending navigation 5 m. from Passaic to P., but the project awaits execution. From the Passaic river, the entire fall of which within the city is 80 ft., immense water power is obtained, with a centre at the great falls, where the direct descent is 50 ft. Below the falls the channel, with its vertical walls of basalt, in connection with the beautiful cataract at its head, gives picturesque and striking scenery. P. is at the point where the river breaks through the Orange Mountains, covers a broad plain whose altitudes are 393 ft. on the w. side, 98 ft. in the natural basin occupied by the older and business portions, and 32 ft. at the lowest. The better residence quarter is beautifully situated on the higher ground, with shaded streets, fine houses, and a fine outlook. Two public parks the Eastside and the Westside, have been recently secured, and for a long period the owners of the water power at the falls have maintained the immediate vicinity as a beautiful park open to all. A large number of bridges span the channel of the Passaic, and the city has considerably more than 200 m. of streets, the principal of which are either well paved or finely macadamized. The several horse railroads, which had been built, and run largely at a loss, since 1868, were consolidated 1888 in one company, which has 20 m. of road, excellent rolling stock and uses electricity. Gas supply dates from 1848, and a second company from 1880. The control of both was assumed 1882 by the United Improvement Co., with larger business, including the use of gas for domestic purposes, for silk finishing, for heating locomotive tires, for laundry and tailor work, etc. Electric lighting is now controlled by the United Gas Improvement Company, was begun by the Paterson and the Edison Cos. 1888. The first has a station equipped with the Arnold-Hochhausen system; uses the Thompson-Houston system of arc and incandescent lighting and transmission of power; has 8 boilers, a Corliss engine and 8 Ball engines, with a total of 1,000 horse-power; 10 dynamos for incandescent lighting, each of 500 16-candle power; 8 dynamos for 50 arc lights, and one for incandescent street lighting of 1,600 16-candle power, and supplies 220 street lights, 150 commercial arc lights, 4,000 incandescent lights, and the two theatres; also 800 incandescent lights to displace

## PATERSON.

the street lamps. The Edison plant was laid for 15,000 incandescent lights, with 6 m. of underground tubing and 18 m. of heavy copper conductors. It supplies 80 arc lights, 5,800 incandescent lamps, and power to a large number of establishments. It has 7 engines, with nearly 1,000 horse power, and 10 Edison dynamos. It has also provided many isolated plants for outlying mills. The expense of street lighting exceeds \$85,000. Telephone facilities date from 1879, Dec. 24, under the N. Y. and N. J. Telephone Co., with about 600 subscribers, and a long-distance service added 1889. The water supply is in the hands of the Passaic Water Co., organized 1854, Mar. 30, with capital \$100,000 and large ownership of land and water-power at the falls of the Passaic, from which the water is taken. The entire falls property, more than 25 acres of park, river, and falls, has belonged to the system since 1872, and important lake property, not yet brought into use, is also owned. The system includes (1890) 55 m. of mains, 790 hydrants, 6,275 takers of water, 4 reservoirs holding respectively 8, 12, 2, and 25 million galls., and a pumping power of 4 million galls. by steam pump, 8 million by horizontal steam engine, and 6 million by turbine wheel. The revenue of the co. has been (1860) \$9,100; (1870) \$45,319; (1880) \$97,600; (1889) \$197,000. The present management contemplates the possibility of a vast service of Passaic water to not only the cities of N. J., but to New York and Brooklyn. The Passaic water has a purity important to the silk manufacture and to the brewing of ale, porter, and beer; and for further convenient supply many artesian wells have been sunk. The sewer system has been made complete under the state law of 1882, at the cost of property owners chiefly for laterals, and half at public cost for mains, with delivery into the river, the rapid current of which acts efficiently. The fire dept. on a paid basis, with 9 engine and 3 truck cos., and a chemical engine co., is in the highest degree efficient, securing low rates of insurance. Fraternity insurance organizations are numerous. The board of health has for many years secured freedom from epidemic diseases. Property is assessed at about 30 per cent. of its market value, and city taxes cannot exceed  $2\frac{1}{2}$  per cent. on the total valuation. There is no state tax, and only a very low county tax.

The public schools of P. are on the basis of a well-organized system, embracing 15 large well-equipped brick buildings, a corps of 220 trained teachers, primary and grammar schools, a high school, and a normal school; with enrolment in one year of 15,000 pupils; also a manual training shop and kindergarten classes; and free supply of text-books and other outfit for all pupils. A business college has been since 1876 an important educational institution of P., for both young men and young women. The free public library, established 1885, under the Prall Library Act of 1884, on a tax of one-third of one mill on every dollar of taxable property, had an income the first year of \$7,000, besides \$5,000 specially subscribed. A fine statue of Vice-pres. Hobart is one of the ornaments of the city.

## PATERSON.

On 1902, Feb. 8-9, a fire, which burned for 18 hours, destroyed the city hall, public library, 5 churches, 5 banks, and the heart of the business section, the loss being est'd at over \$7,000,000. In the same year, March, a flood damaged property to the amt. of several millions, and in 1903, July, a cyclone wrecked many houses. Of more than 40 churches, the principal are St. John's and St. Joseph's Rom. Cath., the Church of the Redeemer and the Eastside Presb., and the Broadway and the Division St. Reformed. Among public buildings before the fire were the Masonic hall, the city hall, city almshouse, the school buildings, the buildings of the first national bank and of the P. bank, and the new building of the P. savings institution. There are three national banks, the first with capital \$400,000, surplus and profit account \$250,000, and a deposit line of from \$1,800,000 to \$2,000,000; the second with capital \$150,009, surplus \$75,000, and deposits \$750,000; and the Paterson, started 1889, July 10, with capital \$200,000, and large deposits. The P. savings inst., chartered 1869, Apr. 2, for 20 years, and re-chartered for 50 years 1889, Apr. 2, has had deposits to 1890, May 1, \$20,540,000; interest paid depositors (Nov. and May of each year) \$1,050,000; balance on deposit 1890, May 1, \$3,600,000; and number of open accounts 13,017. A system of building and loan associations now widely spread, took its start in P. 1878, Nov. 14. The original P. Mutual Benefit and Loan Assoc. with an offshoot, 1882, Nov. 14, in the Union Mutual Benefit Loan Assoc., have had receipts to 1890, June 1, \$1,867,138, have built about 800 houses, and have aided thousands with loans, etc. Other like organizations are effectively promoting the social progress of the industrial masses. P. has 5 daily papers (1 in German), and 8 weekly (2 Ital. and one Holland Dutch).

The industries of P. are of unique historical interest, and of a variety, quality, and magnitude scarcely equalled. The plans of Alexander Hamilton, first sec. of the U. S. treasury, led to the selection of the falls of the Passaic as the source of water-power for a seat of manufacturing development, under the auspices of a 'Society for Establishing Useful Manufactures,' chartered 1791, by the state of N. J. Large tracts of land were secured, the place was named after Gov. Paterson, a cotton-mill built as an example to private enterprise, lots given for churches and cemeteries, and sites for mills and factories sold to manufacturers. The earliest industry was that of cotton, and the large number of mills seemed to make a vast aggregate, which has, however, been greater with much larger mills fewer in number. The location of iron works, in which Thomas Rogers was pioneer 1831, soon made iron the chief industry of P., especially the building of locomotives, the growth of which for 40 years was almost unexampled. The Rogers locomotive and machine works, employing about 2,000 hands; the Passaic rolling mill, with more than 1,000 hands at the works and several hundred elsewhere, erecting buildings, bridges, elevated railway struct-

## PATERSON.

ures, etc.; the Passaic iron works, with upright 5-ton and 10-ton hammers for the heaviest forgings; the Kearney and Foot Co., with a daily output of about 1,200 dozen steel files and rasps; the works of Benjamin Eastwood, of John Royle and Sons, and of Robert Atherton, devoted to an immense production of silk machinery; the Watson Machine Co.; the steam boiler works of Samuel Smith and Son; the Todd machine works, making hemp, flax, jute and silk machinery, and every class of steam engines; and the Riverside bridge and iron works, using 20,000,000 lbs. of iron per year, are examples of the vast iron industry of P. The roll of the great silk mills of P. shows, in a dozen and more examples, one of the most remarkable developments of organized industry, based on invention and artisan skill. It dates from John Royle's founding, about 1840, what is now the Pioneer Silk Co., with a one-story mill covering 1½ acres, and from Dexter Lambert and Co.'s ribbon-weaving works, removed from Boston to P. 1866. The works of Hooper and Scott, operating 11,000 spindles; of the Wm. Strange Silk Co., with 850 hands; of Hamil and Booth, with over 1,000 hands, of the Ramsay and Gore Co., 12,700 spindles; of the Phoenix Manufacturing Co., owning extra mills at Allentown and Pottsville, Penn., and operating over 1,000 looms, with nearly 2,000 hands; of Doherty and Wadsworth; of Grimshaw Brothers; of Jacob Horandt and Son; of the P. Ribbon Co.; and the model mills owned and rented by Nathan Barnert, represent the silk manufacture of P. There are also silk dye works of the largest and finest equipment; and the Barbour Flax Spinning Co. and the Dolphin Co. represent an immense output of linen thread, twine, hemp, jute, and similar goods. Other great concerns are the Roswell factory for making bobbins; the Harding factory for paper boxes and manufacturers' cards; the P. drain, sewer, and well cement pipe works, the Blauvelt carriage and sleigh works; the Bamber marble works; the Hinchcliffe brewing and malting co. and the P. consolidated brewing co., in which are united (1889) four breweries, with a contemplated output of over 500,000 barrels per year of ales, porter, and lager beer.

Pop. (1820) 1,578; (1840) 7,598; (1860) 19,585; (1880) 51,084; (1890) 78,347; (1900) 105,171.

**PATERSON, WILLIAM:** most celebrated, after John Law (q.v.), of the commercial schemers of the 17th c.: 1658, April—1719, Jan. 22; b. in the parish of Tinwald, Dumfriesshire, Scotland. His early career is obscure, but before he was 30 years old he was a merchant, dealing with the W. Indies and other countries. It was he who first projected the Bank of England (incorporated 1694), and he was one of the original directors. He is known most, however, in connection with the famous Darien Scheme (q.v.), of which he was prime mover, and which obtained the royal sanction 1695. This project came to ruin in a few years; but the scheming activity of P. continued unabated. When in 1701 King William resolved to carry the contest with Louis XIV. into the heart of Spanish America, P. was taken into the king's confidence, and, but for that



## PATH—PATHOLOGICAL ANATOMY.

monarch's death, might have seen his dreams of Darien realized. He had a considerable hand in the union of Scotland with England, and was elected to the first united parliament by the Dumfries burghs. By a special act of parliament 1715, he was awarded £18,241 as indemnity for his losses by the Darien Scheme; but he did not live long to enjoy it. P. was a magnificent commercial schemer, evincing not only ingenuity, but surprising forecast and a solidly practical sagacity—even though his greatest scheme came to naught. That very scheme, however, has its revival in the present undertaking of the Darien canal.—See *W. Paterson*, by S. Bannister (1858); *The Birthplace of W. P.*, by W. Pagan (1865).

**PATH**, n. *páth*, plu. *páthz* [AS. *pæ'h*; Dut. *pad*; Ger. *pfad*, a path: Gr. *pátos*, a trodden way: Skr. *patha*, a way; *pada*, the foot]: a way trodden or beaten by the feet of men or beasts; any narrow way or by-way; a course; a road; a passage; a track; course of life: V. in *OE.*, to walk; to go forth. **PATHLESS**, a. *páth'lës*, untrodden. **PATH'WAY**, n. *-wā*, a narrow way to be walked on; a road.

**PATHAN**, n. *pă-tân'*: an Afghan; an Indian Mussulman of Afghan origin.

**PATHETIC**, a. *pă-thët'ík*, or **PATHET'ICAL**, a. *-i-käl* [Gr. *pathêtikos*, liable to suffering—from *pathos*, suffering: F. *pathétique*]: affecting or moving such passions as pity, sorrow, or grief. **PATHET'IC**, n. the style or manner of language or music adapted to awaken the passions of pity, sorrow, or grief. **PATHET'ICALLY**, ad. *-lī*. **PATHET'ICALNESS**, n. *-nës*, the quality of being pathetic.

**PATHOGENETIC**, a. *páth'ō-jën-ët'ík* [Gr. *pathos*, suffering; *gennāō*, I produce]: producing disease, or relating to the production of disease. **PATHOGENY**, n. *pă-thōj'ě-nī*, the study of the origin of disease.

**PATHOGNOMONIC**, a. *pă-thōg'nō-mōn'ík* [Gr. *pathos*, suffering; *gnōmōn*, one that knows]: designating that which is inseparable from a disease; distinctive. **PATHOGNOMY**, n. *pă-thōg'nō-mī*, the science of the signs by which the passions are indicated.

**PATHOLOG'ICAL ANATOMY**: anatomy of diseased organs: included in, but not to be confounded with Pathology (q.v.), as was often done till recent years. It is merely a section—though a most important section—of pathology, contributing (as Prof. Vogel has remarked) 'to practical medicine the solid materials from which to construct a basement, without having the power to erect a perfect edifice.' P. A. enables the surgeon to decide whether a suspicious tumor is malignant or comparatively harmless; and in many other ways it is of the greatest importance to surgery; and of no small importance even to Therapeutics. Scientific treatment necessarily demands an accurate knowledge of the material changes which lie at the foundation of the various morbid symptoms. Hence P. A. not only forms a portion of the positive basis of Therapeutics, but also points out the processes by which the different altered parts may be gradually restored to

## PATHOLOGY—PATIENCE.

their normal condition. It not merely indicates what requires healing, but in many cases also the course requisite to aid the curative tendency of nature. It serves likewise as a check on therapeutics, exposing the absurdity of many pretended methods of cure. It points out, e g., that in a certain stage of inflammation of the lungs (Pneumonia) a fibrinous fluid separates from the blood, and by its coagulation renders a portion of the tissue of the lung impermeable to air; and further that it requires several days for this coagulated matter to resume the fluid condition and to be removed. If any one should assert—and such assertions have often been made—that in this stage of the disease he could apply a remedy which would cure the patient in a few hours, a very slight knowledge of pathological anatomy would show the folly of such an assertion. The best English works on this subject are Vogel's *Pathological Anatomy of the Human Body*, and Jones and Sieveking's *Manual of Pathological Anatomy*.

**PATHOLOGY**, n. *pă-thŏl'ŏ-jŏ* [Gr. *pathos*, suffering; *logos*, discourse]: department of medicine which treats of the nature of diseases, and their causes and symptoms. In treatises written in English, the term is usually so far restricted as not to include the causes, treatment, etc., of diseases; but the most eminent French and German writers regard it as equivalent to 'the Theory and Practice of Medicine,' and consider it as treating not only of the classification, causes, symptoms, and physical signs of diseases, but as also including their seat, the phenomena which precede and follow them, their progress, their duration, their modes of termination, the different forms in which they occur, their complications, the changes to which they give rise in the solids and fluids of the body, and their treatment. **PATHOLOGIC**, a. *păth'ŏ-lŏj'ik*, or **PATH'OLOG'ICAL**, a. *-ŏ-kăl*, pertaining to pathology. **PATH'OLOG'ICALLY**, ad. *-lŏ*. **PATHOLOGIST**, n. *pă-thŏl'ŏ-jŏst*, one versed in, or who treats of, pathology.

**PATHOS**, n. *pă'thŏs* [Gr. *pathos*, suffering, an emotion of the mind]: the manner or style of speech which excites the tender emotions of the mind; expression of strong or deep feeling.

**PATHWAY**: see under **PATH**.

**PATIENCE**, n. *pă'shĕns* [F. *patience*—from L. *patien-tiă*, patience, forbearance—from *patior*, I suffer or endure]: the power or quality of suffering or enduring; calm endurance of pain or labor; calmness of temper under provocation or any calamity; long-suffering; continuance of labor; endurance; resignation; fortitude. **PATIENT**, a. *pă'shĕnt* [F.—L.]: that can suffer or endure calmly; enduring trials without murmuring or discontent; not easily provoked; persevering; calmly diligent; not over-eager or impetuous: N a sick person; one laboring under some bodily disease and under professional treatment. **PA'TIENTLY**, ad. *-lŏ*.

## PATIN—PATOIS.

**PATIN**: see **PATEN**.

**PATINA**, n. *păt'î-nă* [It. *patina*, the varnish of bronze or copper plates: F. *patine*, the fine rust of coins: L. *patinā*; Gr. *patanē*, a flat dish]: the fine varnish-like green rust found covering coins that have been long embedded in particular soils.

**PATMOS**, *păt'mös*; called now **PATINO**, *pă-tē'nō* or **PATMO**, *păt'mō*: bare and rocky island of the group called the Sporades, in the Ægean Sea, s. of Samos; about 45 m. in circumference. It is notable as the place to which the apostle John was exiled, where he saw the visions recorded in the Book of Revelation. On the top of a mountain stands the famous monastery of 'John the Divine,' built in the 12th c. On the e. side of P. is a small village and port. The barren island is under Turkish rule, but is inhabited by Greeks, about 4,000 in number.

**PATNA**, *păt'na* (or **PATANA**, i. e., the town): chief city of a dist. in Bengal locally known as Azimabad; on the s. bank of the Ganges, 330 m. n. w. of Calcutta; within the walls, the city measures 1½ m. from e. to w.; but including suburbs and Bankipur on the w., its area is 18 sq. m. Pop. of city proper (1901) 134,785. The general aspect of P. is mean and unattractive, but its river frontage of about 7 m., its railway communication, and its central position at the junction of three great rivers, the Son, the Gandak, and the Ganges—avenues for traffic of the N. W. Provinces—make it an important commercial centre. The chief imports are cotton goods, oil-seeds, salt, sugar, wheat, and other cereals. The export trade, except in oil-seeds and salt, is small. The chief buildings are the Gola or govt. granary, used in the famine of 1874; the Patna College; the govt. opium factory; a Rom. Cath. church, and several mosques. The seat of civil govt. is at Bankipur.

P., under its early name *Pataliputra*, is supposed to have been founded B. C. 600 by Raja Udayaswa. It was visited by Megasthenes, Greek historian, about B. C. 300, and called Palibothra by him. In modern times, P. is notable as the scene of a massacre of British prisoners by Meer Cossim 1763, leading to war and annexation by the English; and for the mutiny at Dinapur, the military station attached to P., 1857. It was also the headquarters of a Mussulman conspiracy 1864.—The *district* of P., under jurisdiction of the lieut. gov. of Bengal, has 2,079 sq. m.; pop. over 1,756,856.—The *division* of P. has 23,647 sq. m.; pop. 15,063,944.

**PATOIS**, n. *păt'waw* [F. *patois*—from mid. L. *patri-en'sis*, a native—from L. *patriā*, one's native country]: the peculiar dialect of the lower classes in any country, and in any district of a country; provincial and corrupted speech: see **DIALECT**.

## PATON—PATRAS.

PATON, *păt'on*, Sir JOSEPH NOEL, R.S.A: distinguished Scottish artist: b. Dunfermline 1823. It is understood that in early life he employed himself in making designs for the damask manufacturers of his native place, and for the muslin and lace embroiderers of Paisley. He soon turned his attention to art proper; and his cartoon sketch, *The Spirit of Religion*, gained one of the three premiums at the Westminster Hall competition 1845. Two years thereafter, his oil-picture of *Christ Bearing the Cross*, and his *Reconciliation of Oberon and Titania*, jointly gained the prize of £300. He subsequently executed a companion-picture to the *Reconciliation*, entitled the *Quarrel of Oberon and Titania*; both now in the Royal Scottish Academy's galleries in Edinburgh. These pictures made the artist's reputation. Although somewhat hard and dry in color, and without any retiring and shadowy depth, they are full of brilliant fancy; and the multitudes of figures, and the variety of fairy incident, affect the spectator much as the constant sparkle of Congreve or Sheridan affects the reader. He has since painted much more simply and powerfully. *Dante Meditating the Episode of Francesca*, was exhibited in Edinburgh 1852; and the *Dead Lady*, a work of great and solemn pathos, 1854. In 1855, his great picture, *The Pursuit of Pleasure*, was exhibited in that city, where it was much criticised and much admired. He has since painted *Home from the Crimea*, a replica of which is in the possession of Queen Victoria; and *In Memoriam*, a scene from the Indian mutinies; and for the Assoc. for Promotion of Fine Arts in Scotland, a series of picture-illustrations of the *Dowie Dens o' Yarrow*. Among his important pictures are *Dawn: Luther at Erfurt*, *The Fairy Raid*, *Faith and Reason*, *Gethsemane*, *Christ and Mary at the Sepulchre*, *The Man of Sorrows*, *Mors Janua Vitæ*, *The Spirit of Twilight*, *Thy Will be Done* (1879), etc. Many of his works have been engraved, and are deservedly popular. Together with his brother he illustrated Aytoun's *Lays of the Scottish Cavaliers*, and 1864 he executed 20 illustrations of the *Ancient Mariner*. P. was appointed queen's limner for Scotland 1865, received knighthood 1867, and in 1876 was made LL.D. by Edinburgh Univ. He has published two vols. of poems.

PATONCE, *pâ-tõns'*, CROSS [Lat. *patens*, expanding]: in *heraldry*, a cross with its terminations expanding like early vegetation or an opening blossom.

PA'TOS, LAGO DES: see RIO GRAND DO SUL.

PATRAS, *pâ-trâs'* (anc. PATRÆ, Turk. BALIABADRA): a fortified seaport, and the most important trading town in w. Greece, in the govt. of Achaia and Elis; on the e. shore of the gulf of P., 12 m. s.s.w. of Lepanto. It is overlooked by the strong citadel—on the site of the ancient Acropolis—crowning a ridge on whose s. slopes the ancient city, as well as the modern one before the revolution, was built.



Patonce.

## PATRIA POTESTAS.

The P. of to-day stands on a level space close to the sea. The plain of P. is exceedingly valuable for the currants grown, which are the most important export of the town. Its harbor, though protected by a mole, is unsafe, and exposed to heavy seas. Earthquakes are frequent, and most of the houses are on that account of only one story. Capotes are made here of mixed wool and goat's hair; and, besides currants, oil, valonia, raw silk and cotton, wool, hides, wax, etc., are exported. P. is by far the most important commercial town on the continent of Greece, though it suffered severely during the Greek revolution. *Patrae* (still the Greek name) is the only one of the 'twelve cities' of Achaia which exists as a town; but most of its relics have been swept away by earthquake and revolution. Pop. about 26,000.

PA'TRIA POTES'TAS [L. power of the father]: term denoting the power which the civil law gave to the Roman father over his children, and which has been the foundation of the greatly modified paternal authority recognized in modern systems of jurisprudence. The right of a parent to control his child not come to years of discretion is a part of natural law, but the more extensive *patria potestas* of the Romans was probably a relic of those early times in which families, or tribes considered as families, led a wandering pastoral life in dread of each other, under the guidance of a chief, whom it was necessary to invest with almost unlimited authority.

By the Roman law, the *patria potestas* was acquired naturally, by the birth of a child in wedlock, or civilly, by legitimation or adoption. An unemancipated son or daughter, a grandchild by a son, or any other descendant by males, was viewed as part of the parent's property. In early times a father had the power of life and death over his children: by the Laws of the Twelve Tables he could sell them as slaves, or could transfer them to another family by adoption. Under the republic, the despotic authority exercised by fathers over their offspring was practically limited to a considerable extent by the censors; and several emperors issued constitutions to restrain the cruelties often perpetrated by fathers. First the right of sale, then that of life and death was taken away. Alexander Severus (reigned 222-235) restricted to moderate chastisement the right of the father, and Constantine declared the father who killed his son guilty of murder. By the early Roman law, the son, being in his father's power, could not acquire property for himself; his acquisitions all belonged to his father; hence he was incapable of making a testament. There were, however, particularly in later times, modes by which he could acquire *peculium*, or property which should be independent of his father. A father might give his son property to trade on, which would be his own; and later a son acquired for himself whatever he gained in military service, or by the discharge of certain civil functions. In all matters belonging to the *jus publicum* a son was independent of his father; he could vote at the elections, hold the most important offices of state, or command the army.

## PATRIARCH.

In later times, a son promoted to the consular dignity ceased to be under the restraints of paternal control, but, unlike an emancipated son, he retained his rights of succession. Lawful children were entitled to alimēt from their parents; an obligation attached in the first instance to the father and mother, and failing them, to the grandfather. Until the time of Justinian (reigned 527-565) illegitimate children had a claim for support against their mother only; that emperor gave them a right to demand alimēt from their father.

In no modern system has the paternal power been carried so far as under the Roman law. By the law of England, a father is guardian to his lawful children in minority, though this right ceases to some extent at the age of 14. He has the power of moderate chastisement. As guardian, he receives the rents of any real estate which the child may possess, which he must account for when majority is attained. The paternal power never extends beyond majority, and, to some effect, marriage acts as an emancipation. A father may by deed appoint a guardian to such of his children as are unmarried at his death till they attain majority. According to the French 'Code Civile,' a child is under the authority of his parents till majority or emancipation; up to that time he cannot quit the paternal residence without leave of his father, except for enrolment in the army at 18 years of age. Majority is attained at the age of 21, but a minor is emancipated by marriage. At 15 a minor may be emancipated by his father, or, if his father be dead, by his mother, by a simple declaration before a magistrate. The father possesses somewhat extensive powers of chastisement.

See PARENT AND CHILD.

PATRIARCH, n. *pā'trī-ārĕk* [F. *patriarche*, a patriarch—*from* Gr. *patriarchēs*, the founder or head of a family—*from* *patēr*, a father; *archē*, rule]: epithet applied to an aged man; the head of a family in ancient times: in the *Eastern or Greek Church*, an ecclesiastical dignitary superior to an archbishop (see PATRIARCH, below). THE



Patriarchal  
Cross.

PATRIARCHS, Abraham, Isaac, Jacob, and his 12 sons, progenitors of the Israelite nation. PA'TRIARCHISM, n. *-izm*, government by patriarchs. PA'TRIARCHSHIP, n. *-shĭp*, or PA'TRIARCHATE, n. *-āt*, office, dignity, or jurisdiction of a patriarch; the residence of a patriarch. PA'TRIARCH'AL, a. *-āl*, or PA'TRIARCH'IC, a. *-ĭk*, relating to patriarchs, or subject to them. PATRI-CIATE, n. *pā-trĭsh'ĭ-āt* [L. *patricĭus*, noble]: the office of patriarch; the patriarchate: also the rank of a Patrician (q. v.). PATRIARCHAL CROSS, in *her.*, cross which, like the patriarchal crosier, has its upright part crossed by two horizontal bars, the upper shorter than the lower. A cross patriarchal fimbriated or was a badge of the Knights Templars.

## PATRIARCH.

PA'TRIARCH: head of a family, household, or tribe, in the antediluvian period of Scripture history. The designation is still more familiar as denoting in the history of Israel the three progenitors of the Jewish people, Abraham, Isaac and Jacob. In later history of the Jews, after the destruction of Jerusalem, the title designated the heads of the Sanhedrim, one of whom, the patriarch of the west, resided at Tiberias, in Galilee, and the other, the patriarch of the eastern Jews, at Babylon. The most familiar use of the word is in the history of the Christian church, as the title of the bishops of certain great Metropolitan (q.v.) Sees, who held not only rank beyond other metropolitans, but also a jurisdiction almost identical with that of the metropolitan in his own province over all the metropolitans themselves (with their provinces) included in their district—the district being called a PATRIARCHATE. The name P. seems originally to have been given commonly to bishops, or at least was certainly given in a less special sense than it eventually assumed: the date at which the title first assumed its now received use cannot be exactly determined. It is certain, however, that the name and the office both were recognized before the Council of Nice, at which time, as we learn from the 6th canon, the patriarchal sees, acknowledged by 'ancient custom,' were three; Rome, Antioch, and Alexandria. After the translation of the seat of empire to Byzantium, thenceforward called Constantinople, that see, originally subject to the metropolitan of Heraclea, obtained, first metropolitan, afterward patriarchal rank; and eventually established a precedency over the patriarchates of Antioch and Alexandria, being second only to Rome. The contests between the patriarchs of Rome and Constantinople were among chief causes of the GREEK SCHISM (q.v.). To these four patriarchates was added a fifth, in 451, that of Jerusalem, formed out of the ancient patriarchate of Antioch. The limits of these five patriarchates can be only loosely assigned. The authority of a P. was, in the main, that of a metropolitan, but extended over the metropolitans themselves: he had a right to consecrate the metropolitans, and to preside over the councils of his patriarchate. After the Greek Schism, particularly after the establishment of the Latin Kingdom of Jerusalem, Latin prelates were appointed with the title and rank of P. in the four great Eastern sees. It was hoped that the union of the churches, effected at the Council of Florence, would end the contest thus created; but that union proved transitory, and the double series of patriarchs has been continued to the present day. The Nestorian and Eutychian sections of the Eastern Churches, too, have each its own patriarch; and the head of that portion of the Nestorian section, which in the 16th c. was reconciled with the Roman see, though known by the title *Catholicos*, has the rank and authority of P. After the separation of the Russian Church from that of Constantinople, the name and authority of the metropolitan in the end was transformed into that of P.; but the office was suppressed by Peter the Great.

## PATRICIAN.

Besides these, which are called the Greater Patriarchates, there have been others in the Western Church known as Minor Patriarchates. Of these the most ancient were those of Aquileia and Grado: the latter was transferred to Venice 1451; the former was suppressed by Benedict XIV. France also had a P. of Bourges; Spain, for her colonial missions, a P. of the Indies; and Portugal a P. of Lisbon.

In the non-united Greek Church, the ancient system of the three patriarchates of Constantinople, Antioch, and Jerusalem is nominally maintained, and the authority of the patriarchs is recognized by their own communion; but the jurisdiction limits of the P. of Constantinople, who is acknowledged as the head, have been much modified. The Russo-Greek Church withdrew from him partially in the 17th, and finally in the 18th c. The patriarchate of Greece proper has been practically separated since the independence of the kingdom of Greece; and some years since it formally declared its independence. The patriarchs of Jerusalem and Antioch have few followers of their rite.

PATRICIAN, n. *pă-trîsh'ăn* [F. *patricien*—from L. *patriciûs*, patrician, noble—from *patrês*, the fathers]: in *anc. Rome*, one of the nobility: ADJ. noble; not plebeian.—*Patrician* was the designation of the members of Roman *gentes*, of whom the *populus Romanus* consisted, and of their descendants by blood and adoption. *Patres* and *patriciî* were in the early days of Rome synonymous; they were so named from the *patrocinium* which they exercised over the whole state, and all classes of whom it was composed. Niebuhr's researches have established that, until the *plebs* became a distinct order, the patricians were the entire citizens or *populus* of Rome; a select number of them were senators; and the original inhabitants, reduced to a condition of servitude, were known by the name of *clientes* or *plebs*. The amalgamation of the three tribes of Ramnes, Tities, and Luceres, gave rise to a distinction between *patres majorum gentium* and *patres minorum gentium*—the latter term being applied to families recently elevated to an equality with the old patrician class. On the establishment of the plebeians as a distinct order, sharing certain rights with the patricians, the patriciate became an aristocracy of birth, in exclusive possession of a number of important privileges. A long struggle between the two orders ended in the attainment by the plebeians of a political equality, and the establishment of a new aristocracy of *nobiles* based on wealth and office. Under Constantine, the dignity of *patricius* became a personal title; not hereditary, but conferring very high honor and certain privileges. It was created at Constantinople, and not confined to Romans or subjects of the empire, but bestowed sometimes on foreign princes. These patricians, unlike the old Roman order, were distinguished in dress and equipage from ordinary citizens. The popes in after times conferred the same title on eminent persons and princes, including many German emperors. In several Germanic kingdoms the title P. was bestowed on distinguished subjects; and in parts of Italy the hereditary nobility are still styled patricians.—See NOBILITY.



## PATRICIANI—PATRICK.

PATRICIANI, n. *pa-tris-ĭ-ā'nī*: in *chh. hist.*, Mani chæan sect, followers of one Patricius, of whom nothing is known with certainty. They probably arose in the 4th c. They taught that suicide was lawful, since man's body was the work of the Devil. Epiphanius does not mention them.

PATRICIATE: see under PATRIARCH.

PATRICK, *păt'rik*, MARSENA R.: soldier and agriculturist: 1811, Mar. 15—1888, July 27; b. Hounsfield, Jefferson co., N. Y. He graduated at U. S. Milit. Acad. 1835; served in Mexican war; was made capt. 1847; brevetted major 1849; resigned 1850, to engage in farming, and 1859 was made pres. of the N. Y. State Agricultural College. At the outbreak of the civil war he served as inspector-gen. of N. Y. militia; became brig.gen. of vols. 1862, Mar.; was with Gen. McDowell in the valley of n. Va., and with the Army of the Potomac at South Mountain and Antietam. In Oct., after the battle of Antietam, he became provost-marshal-gen. to the army of the Potomac; later to the combined armies before Richmond; and, on Lee's surrender, to the dept. of Va. He resigned 1865, June 12, to resume agricultural interests; was pres. of the N. Y. State Agricultural Soc. 1867; commissioner for the state 1868-9, and 1879-80; and 1880-88 was gov. of the central branch of the national home for disabled volunteer soldiers, in Ohio. He died at Dayton.

PATRICK, SAINT (Lat. *Patricius*): distinguished missionary of the 5th c., commonly known as the Apostle of Ireland: conjecturally 396-469; b. Bonavem Taberniæ. There is uncertainty as to date and place of his birth. The year of his birth has been variously assigned to 377 and 387, of which the latter, if not even a later date (396) is more probable. The date of his death is much disputed; the Bollandists placing it 460, while Ussher holds it to have been 493. Dr. Todd inclines strongly to Ussher's opinion; in which case P.'s age would have reached 126, or at least 116: more probable is the date 469 given in Tirechan's *Annotations*. Of the place of his birth, it is known from his own confession only that his father—a man of some dignity of position—had a small farm near Bonavem Taberniæ, which place is traceable as having been near the Solway, and s. of the wall of Severus; and in one of the ancient lives he is said to have been born at Nemthur. Arguing on these data, with collateral indications, many writers assign his birth to a place in the estuary of the Clyde (called from him Kilpatrick) at or near the modern Dumbarton. His father, he himself tells, was a deacon named Calpurnius; his mother, according to the ancient biographers, was named Conches or Conchessa; according to some of these authorities, a sister of St. Martin of Tours. P.'s original name is said to have been Succat, Patricius being the Roman appellation by which he was known. In his 16th year he was seized, while at his father's farm, by a band of pirates, and with a number of others was carried to Ireland, and sold to a petty chief,

## PATRICK.

in whose service he remained six years, prob. in the county Antrim; after which he escaped; and devoted himself with noble zeal to the conversion of the Irish. The story that he went to France, where he became a monk first at Tours, afterward in the celebrated monastery of Lerins, and that he went, 431, to Rome, whence he was sent by Pope Celestine to preach in Ireland—is entirely without evidence, though long the received account. Much obscurity has arisen from confusing two other men of the name *Patricius* with this saint: one of these, under the name Palladius, was sent by Pope Celestine as bishop to Ireland 431. St. P.'s mission, on which he entered prob. about 425, was eminently successful. He tells us that he was incited to it by a vision, and by a voice calling him to labor in Ireland. Enthusiasm and sagacity seem to have been combined in his character. He adopted the expedient of addressing himself first to the chiefs, and of improving, as far as possible, the spirit of clanship, and other existing usages of the Irish for furtherance of his preaching; and beyond doubt he had much success in Christianizing the ancient Irish belief and practice. By degrees he visited a large portion of the kingdom, and baptized great numbers of the chieftains and of the people. According to the accounts of his Irish biographers, he founded 365 churches, and baptized with his own hand 12,000 persons. He is said also to have ordained a vast number of priests, and to have blessed very many monks and nuns. After he had been about 20 years engaged in his missionary enterprise, he is said to have fixed his see at Armagh about 454; and having procured two of his disciples to be ordained bishops, he held probably more than one synod, the decrees of which have been a subject of much controversy. He died at a place called Saul, near Downpatrick; and his relics were preserved at Downpatrick till the Reformation. The place is still venerated by the people. The only certainly authentic literary remains of St. P. are his 'Confession' and a letter, both of very rude Latinity, but of much historical interest. The letter is addressed to Coroticus, supposed to have been a Welsh chieftain named Caradoc (from whom Cardigan is named), who had made a descent on the Irish coast, and slain or carried off with great cruelty a number of the Irish, many of whom were neophytes. These, with some other remains ascribed to him, as also decrees of synods, were published in Wilkins's *Concilia*, and separately by Ware, *Opuscula S. Patricii Adscripta* (1656) and by Villanueva (Dublin 1835). The latest biography of St. P. is that of the Rev. J. H. Todd, 1 vol. 8vo. (Dublin 1863).

PATRICK, ST., ORDER OF: national order of knighthood for Ireland, established by George III. 1783, Feb. 5; enlarged 1833. As originally constituted, it consisted of the Sovereign, the Grand-master (always the lord-lieut. of Ireland for the time being), and 15 Knights. By the statutes of 1833 the number of knights was increased to 22.

The *Collar* of the order (of gold) is composed of roses with harps, tied together with a knot of gold, the roses

## PATRICK.

being enamelled alternately white within red, and red within white; and in the centre is an imperial crown surmounting a harp of gold, from which the badge is suspended. The *Badge* or *Jewel* is of gold, and oval; surrounding it is a wreath of shamrock proper on a gold field: within this is a band of sky-blue enamel charged with the motto of the order, *QUIS SEPARABIT MDCCLXXXIII.* in gold letters; and within this band a saltire gules (the cross of St. Patrick), surmounted by a shamrock or trefoil slipped vert, having on each of its leaves an imperial crown *or*, The field of the cross is either argent, or pierced and left open.



Order of St. Patrick.

A sky-blue *Ribbon*, worn over the right shoulder, sustains the badge when the collar is not worn. The *STAR*, worn on the left side, differs from the badge only in being circular in place of oval, and in substituting for the exterior wreath of shamrocks eight rays of silver, four of which are larger than the other four. The *MANTLE* is of rich sky-blue tabinet, lined with white silk, and fastened by a cordon of blue silk and gold with tassels. On the right shoulder is the *HOOD*, of the same materials as the mantle. The order is indicated by the initials *K. P.*

## PATRICK—PATRIPASSIANS.

**PATRICK, SIMON, D.D.:** Eng. divine: 1626, Sep. 8—1707, May 31; b. Gainsborough, Lincolnshire. He entered Queen's Coll., Cambridge, 1644; took orders 1651; was chaplain to Sir Walter St. John, and later vicar of Battersea, Surrey; was made rector of St. Paul's, Covent Garden, Lond., 1662; became Dean of Peterborough 1678, Bp. of Chichester 1689, and served that year in settling the affairs of Ireland; and 1691–1707 was Bp. of Ely. He was an author of hymns, chiefly from the Latin of Prudentius, and of sermons, devotional treatises, a translation of the *De Veritate* of Grotius, a *Commentary on the Historical and Poetical Books of the Old Test.* (to Canticles, 10 vols., 1695–1710, reprinted 1853), a controversial tract of some note 1668, and Autobiography, pub. 1839 at Oxford, and *The Appearing of Jesus Christ*, printed first 1863 at Cambridge. A collected edition of his writings appeared at Oxford 1859 (9 vols.). In practical divinity his writings have been held in high estimation.

**PATRIMONY, n.** *păt'ri-mön-ĭ* [L. *patrimōnĭum*, a paternal estate—from *patēr*, a father: It. *patrimonio*: F. *patrimoine*]: a right or estate inherited from a father; a church estate or revenue. **PAT'RIMO'NIAL, a.** *-mō'nĭ-ăl*, inherited from ancestors. **PAT'RIMO'NIALLY, ad.** *-lĭ*.

**PATRIOT, n.** *pā'trĭ-ōt* [F. *patriote*, a patriot—from L. *patrĭa*, one's native country: Gr. *patriōtēs*, one of the same country—from *pater*, a father: It. *patriotto*]: one who loves his country, and exhibits great zeal in its interests; one whose ruling passion is the love of his country: **ADJ.** devoted to the welfare of one's country. **PA'TRIOT'IC, a.** *-ĭk*, full of patriotism; actuated by the love of one's country. **PA'TRIOT'ICALLY, ad.** *-lĭ*. **PA'TRIOTISM, n.** *-ĭzm*, love of one's country; the passion which incites to the service of one's country.

**PATRIPASSIANS, pā-trĭ-pās'ĭ-anz, or -pāsh'anz** [from L. *pater*, father, and *passus*, suffered]: one of the earliest anti-Trinitarian sects; which in maintaining the oneness of the Godhead, held that all that is ascribed in the Scriptures, according to the Trinitarian exposition, to any of the Three Persons, is in reality true of the one Principle, whom alone these sectaries accepted as Deity; from which tenet they were termed 'Monarchians' [Gr. *monos*, one, and *archē*, principle]. The leader of this sect was Praxeas, native of Phrygia, who lived in the end of the 2d c. The name P. (Greek equivalent *Patropaschites*), was in some sense a sobriquet, being founded on what their antagonists regarded as the absurd consequence derivable from their doctrine—viz., that as it was true to say that Jesus, in whom dwelt the Logos, or the Son, suffered, therefore it would be true on their principle to say that the Father suffered. The sect in this particular form was known chiefly in Rome; but their principles are mainly the same with those of the Sabellians. In Rome, Praxeas was succeeded by Noetus, but the party does not appear to have been numerous or influential.—In recent times, the doctrine of the suffering in some sense of the Eternal Father,

## PATRISTIC—PATRON.

for and with simple men, is held, in an undeveloped form, by many Christians to whose sense of the Divine tenderness it appeals, but who refrain from the philosophical entanglements in which the doctrine anciently was involved.—See MONARCHIANISM.

PATRISTIC, a. *pă-tris'tik*, or PATRIS'TICAL, a. *-tī-kāl* [F. *patristique*—from L. *patrēs*, the fathers]: pertaining to the writings or theology of the ancient fathers of the Christian Church.

PATROC'LUS: see ACHILLES.

PATROL, n. *pă-trōl'* [F. *patrouille*; Sp. *patrulla*; It. *pattuglia*, a night-watch: F. *patrouiller*, to paddle in the water—from *patte*, the paw]: small detachment of soldiers (perhaps five or six) from the main-guard or picket, under a corporal or sergeant, ordered to march a certain round either within a garrison or camp, or in the streets of a town, generally during night or in times of excitement, to arrest disorderly persons or soldiers out of barracks, and to preserve the peace: the act of thus going round. In a besieged fortress, a patrol is a strong body of troops sent out to traverse the lines of defense, in front of the sentries, to obtain intelligence of the enemy and to watch against assault. PATROL, v. to march through or round; to go the allotted rounds, as a guard. PATROL'LING, imp.: N. the performance of the duties of a patrol. PATROLLED, pp. *pă-trōld'*.

PATRON, n. *pă'trōn* [F. *patron*, a patron—from L. *patrōnus*, a protector—from *pater*, a father: Gr. *patrōn*]: *literally*, one who takes the place of a father; one who countenances and protects either a person or a work (see PATRON, below): a person who has the gift and disposal of church preferment (see PATRONAGE, ECCLESIASTICAL): ADJ. giving aid or exercising guardianship, as a patron saint. PA'TRONLESS, a. *-lēś*, without a patron. PATRONAGE, n. *păt'ron-āj*, protection; special countenance or support; power of bestowing some office, title, or privilege (see PATRONAGE, ECCLESIASTICAL): in OE. for *patronize*. PA'TRONESS, n. *-ēs*, a lady who protects or countenances. PA'TRONIZE, v. *-īz*, to support; to countenance; to encourage; to favor or promote. PA'TRONIZING, imp.: ADJ. acting as a patron; favoring; promoting. PA'TRONIZED, pp. *-īzd*. PA'TRONI'ZER, n. *-zēr*, one who patronizes. PATRON SAINT, in the *Rom. Cath. Chh.*, some saint assumed as a guardian either of a person or a place. CARDINAL PATRON, the prime minister of the pope. PATRONS OF HUSBANDRY: see HUSBANDRY, PATRONS OF.

## PATRON—PATRONAGE.

**PA'TRON**: among the Romans originally a citizen who had dependents, who were called *clients*, attached to him. Before the time of the Laws of the Twelve Tables, the most frequent use of the term *patronus* was in opposition to *libertus*, these two words being used to signify persons who stood to one another in the relation of master and manumitted slave. The Roman was not denuded of all right in his slave when he freed him; a tie remained somewhat like that of parent and child, and the law recognized important obligations on the part of the *libertus* toward his P., whose neglect involved severe punishment. In some cases the P. could claim a right to the whole or part of the property of his freed man. The original idea of a P. apart from the manumitter of slaves continued to exist. A Roman citizen, desirous of a protector, might attach himself to a P., whose client he thenceforward became; and distinguished Romans were sometimes patrons of dependent states or cities, particularly where they had been the means of bringing them into subjection. Thus the Marcelli were patrons of the Sicilians, because Claudius Marcellus had conquered Syracuse and Sicily. The P. was the guardian of his client's interest, public and private; as his legal adviser, he vindicated his rights before the courts of law. The client was bound, on various occasions, to assist the P. with money, as by paying the costs of his suits, contributing to the marriage portions of his daughters, and defraying in part the expenses incurred in discharge of public functions. P. and client were under an obligation never to accuse one another; to violate this law amounted to the crime of treason, and any one was at liberty to slay the offender with impunity. One obvious effect of the institution of *clientela* was the introduction of an element of union between classes of citizens who were otherwise continually brought into opposition to each other. As the P. was in the habit of appearing in support of his clients in courts of justice, the word *patronus* acquired, in course of time, the signification of advocate or legal adviser and defender, the client being the party defended; hence the modern relation between counsel and client.—*Patron*, in after times, became a common designation of every protector or powerful promoter of the interests of another; and the saints, who were believed to watch over the interests of particular persons, places, trades, etc., acquired in the middle ages the title patron saints. The saint in whose name a church is founded is considered its patron saint.

The term P. has been applied also to those who endowed or supported churches and convents. See PATRONAGE, ECCLESIASTICAL.

**PATRONAGE, ECCLESIASTICAL**: right (recognized especially in churches by law established, as in England) of presenting a fit person to a vacant ecclesiastical benefice. Nothing of the kind is known in the United States. The patron, in the original and more strict sense, was the person who founded or endowed the church. In the early ages of Christianity, the countries where the new religion

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had been adopted were parcelled out into large districts or dioceses, under superintendence of a bishop, who usually resided in the neighborhood of one of the religious houses. Within such district the bishop had the nomination of the priests, who supplied religious instruction to the people. The priests were paid out of the episcopal treasury, and travelled about in the exercise of their duties, having their residence with the bishop, and forming that *episcopi clerus* which constituted the notion of cathedral churches and monasteries in their simplest form. Occasionally a bishop endowed a church in his diocese, and attached a priest permanently to it; and in Gaul, in the 5th c., a bishop who founded a church in a neighboring diocese was allowed to appoint an incumbent of his choice. As Christianity became more universal, and the population increased, the means of worship supplied by the bishoprics, the monasteries, and occasionally episcopally endowed churches, became inadequate for the demands of the people, and the proprietors of lands began to build and endow churches in their own possessions. In such cases the chaplain or priest was not paid by the bishop, but was allowed to receive for his maintenance, and for the use of his church, the whole or a part of the profits of the lands with which the founder had endowed it, and the offerings of those who frequented the church for worship. A district was defined by the founder, within which the functions of the officiating priest were to be exercised; and both the burden and the advantages of his ministry were limited to the inhabitants of that district. As these pious foundations tended both to the advancement of religion and to the relief of the episcopal treasury, they were encouraged by the bishops, who readily consecrated the churches thus established, and consented that the incumbent should be resident at the church, and receive the tithes and offerings of the inhabitants and what endowment the founder had annexed to the church. Eventually, it came also to be stipulated with the bishop that the founder and his heirs should have a share in administration of the property, and have the right to nominate a person in holy orders to be the officiating minister whenever a vacancy occurred. It became also a not unusual arrangement that when owners of estates rebuilt such churches as were dependent on the cathedral, or undertook to pay the incumbent, to the relief of the cathedral, the right of presentation was transferred from the bishop to these persons, who thenceforward stood in the same relation to these churches as if they had been the original founders. Out of these private endowments arose the parochial divisions of a later time, which thus owe their origin rather to accidental and private dotation than to any legislative scheme for the ecclesiastical subdivision of the country (see PARISH). The bounds of a parish were at first generally commensurate with those of a manor, and the lord of the manor was the hereditary patron. The person having the privileges of a founder was called *patronus* and *advocatus*. He had a pre-eminent seat and a burial place in the church; he held a

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precedence among the clergy in processions; his name and arms were engraved on the church and on the church-bells, and he was specially named in the public prayers. He had the right to a certain portion of the church funds, called *patronagium*, and received the fruits of the benefice during a vacancy. In the course of time it happened sometimes that, with concurrence of all parties interested, the patronage, and the church with its revenues and appurtenances, were made over to a religious house, which thus became both patron and perpetual incumbent of the parish, while the immediate duties of the cure were devolved on a vicar or stipendiary curate. In France, the right of patronage was often extended to churches not originally private foundations by the necessities of the sovereigns, which led them to take possession of church property, and bestow it in fee on laymen, who appropriated the greater part of the revenues, and took the appointment of the clergy into their own hands. For a length of time, not merely the nomination but the investiture of the clergy came to be exercised by lay patrons, a state of matters which roused the indignation of successive popes and councils: until it was at last ruled by the third and fourth Lateran Councils (1179 and 1215) that the presentation of the patron should not of itself suffice to confer any ecclesiastical benefice, even when qualified by the discretionary power of rejection given to the bishop, when the presentee was a layman. It was declared necessary that the presentee should not merely have the temporalities of the benefice conferred on him by induction, but also be invested with the spiritualities by institution. When the bishop was patron of the benefice, the ceremonies of induction and institution were united in that of collation. With the growth of the papal power, however, a practice arose by which the right of presentation or induction, which had nominally been left to the patrons, became in some degree nugatory. Toward the close of the 12th c., letters of request, called mandates or expectatives, began to be issued by the popes to patrons, praying that benefices should be bestowed on particular persons. What had at first been requested as a favor was soon demanded as a right, and a code of rules was laid down with regard to grants and revocations of expectatives. In the 13th c. the patronage of all livings whose incumbents had died at the court of Rome (*vacantia in curiâ*) was claimed by the pope; and as ecclesiastics of all ranks from every part of Europe frequently visited Rome, the number of benefices *vacantia in curiâ* was always very great. Clement V. went so far as broadly to declare that the pope possessed the full and free disposal of all ecclesiastical benefices. The practice next arose of the pope making reversionary grants, called provisions of benefices, during the lifetime of the incumbent, and reserving what benefices he thought fit for his private patronage. By means of permissions to hold benefices *in commendam*, and dispensations for non-residence and holding of pluralities, more than 50 benefices were often held by one person; and throughout all Europe the principal benefices were



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filled by Italian priests, nominees of the popes—priests often ignorant of the language of the people among whom they ministered. In the 14th c. these claims encountered much opposition. England took the lead in an organized resistance, which was in the end successful. A series of English statutes was passed, beginning with the Statute of Provisors, 25 Edw. III. c. 6, solemnly vindicating the rights of ecclesiastical patronage, and subjecting to severe penalties (see PRÆMUNIRE) all persons who should attempt to enforce the authority of papal provisions in England. The principles adopted by the third and fourth Lateran Councils (see above) have since been substantially the law of patronage in Rom. Cath. countries. A lay patron is, by the canon law, bound to exercise his right of presentation within four, and an ecclesiastical patron within six, months, failing which the right to present accrues *jure devoluto* to the bishop of the diocese. Patronage has always been more or less subject to alienation, transmission, and the changes incident to other kinds of property. For the modern practice of patronage in the Rom. Cath. Church, see PROVISION.

In England, where the modified canon law, which was in use before the Reformation, is still in force, the rights of patrons do not differ materially from those which they possess in Rom. Cath. countries. For some details regarding the right of presentation in England, see ADVOWSON.

In Scotland, at the Reformation, the rights of patrons were reserved, and presbyteries were bound by several statutes to admit any qualified person presented by the patron. The principle of these statutes was retained in the enactments introducing Episcopacy. On the establishment of Presbytery under favor of the civil war, patronage was abolished by act 1649, c. 23, and the election of the clergy was committed to the kirk-session. At the Restoration (1660) this statute fell under the act rescissory, and patronage was replaced on its former footing. On the re-introduction of Presbytery at the Revolution (1688) patronage was again cancelled, and the right to present conferred on the Protestant heritors and the elders of the parish, subject to the approval or rejection of the whole congregation. In consideration of being deprived of the right of presentation, patrons were to receive from the parish a compensation of 600 merks (£33 6s. sterling), on payment of which they were to execute a formal renunciation of their rights. Only three parishes effected this arrangement with the patron, and patronage was permanently restored in all the parishes where no renunciation had been granted by 10 Anne, c. 12. This act, with modifications introduced by 6 and 7 Viet. c. 61, was law till 1874. If a patron failed to present for six months after the occurrence of a vacancy, the right to present fell to the presbytery *jure devoluto*. The presentee, before he acquired a right to the emoluments of the benefice, was required to be admitted to it by the presbytery of the bounds. He was first appointed to preach certain trial sermons. Within six weeks the people were invited to sign a written call to

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the presentee to be their minister, and however few the signatures to the call might be, the presbytery were accustomed to pronounce a formal judgment sustaining it. They then proceeded to examine into the qualifications of the presentee, and, provided the result were satisfactory, the ordination followed (if he had not been previously ordained), and he was formally admitted minister of the parish by the presiding minister. Soon after the above-mentioned act of Queen Anne, a feeling which had sprung up in favor of popular election, in opposition to patronage, led to various acts of resistance to the settlement of presentees, and brought about two considerable secessions from the Church of Scotland. It continued for a length of time to be a subject of dispute how far the right of the church to judge of the fitness of presentees could entitle her to make rules tending to disqualify them, and in particular whether she could legally make the dissatisfaction of the congregation a disqualification. For a long time prior to 1834, there had been no attempt to give effect to any dissent on the part of the congregation. In that year the law of patronage again became a ground of contention, when a majority of the general assembly of the church embodied their views on the subject in the so-called Veto Act, which declared that no minister was to be imposed on a congregation when a majority of heads of families and communicants should dissent. The decision of the court of session, confirmed by the house of lords, finding this act to be *ultra vires* of the general assembly, led to the secession of 1843 and formation of the *Free Church* (q.v.). After that event, an act, 6 and 7 Vict. c. 71, commonly called Lord Aberdeen's Act, was passed to fix by a legislative provision the effect which the church courts were in future to be entitled to give to the dissent of the congregation in the collation of ministers. It was there enacted that, after the trial sermons, the presbytery should give to the parishioners, being members of the congregation, an opportunity to state objections which did not infer matter of charge to be proceeded against according to the discipline of the church. The presbytery were either to dispose of the objections, or to refer them to the superior church judicatory; and if they were considered well founded, the presbytery might reject the presentee. No power was given to reject him on the ground of mere dislike by any portion of the congregation. By an act of parliament 1874, patronage in Scotland was abolished, and the right of choosing their minister transferred to the congregation, provision being made to compensate the previous patron to the extent of one year's stipend of the parish.

In the Prot. churches of Germany, Sweden, and Denmark, patronage exists to some extent, subject to restrictions, which differ much in different localities. The right to present is sometimes divided between the patron and the consistory. The parishioners have in many instances a voice: the appointment may be entirely in their hands, or they may have merely a right to reject the presentee after he has been subjected to the ordeal of a trial sermon; and

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in either case this right may be exercised, according to local usage, either by the parishioners at large, by a committee of their number, or by the bürgermeister. When there is no patron, the choice generally rests with the consistory in East, and with the parishioners in West, Germany. Induction by the superintendent completes the right of the presentee.

In the Greek Church the right to present is generally in the hands of the bishops, excepting in Russia, where lay patronage exists to a limited extent.

**PATRONOMATOLOGY**, n. *pāt'rō-nōm'ā-tōl'ō-jī* [Gr *patēr*, a father; *onoma*, a name; *logos*, discourse]: the science of surnames or a treatise on them.

**PATRONYMIC**, n. *pāt'rō-nīm'ik* or *pā'trō-nīm'ik* [OF. *patronymique*, derived from ancestors' names—from L. *patronymicus*, belonging to the father's name—from Gr. *patēr*, a father; *onoma*, a name]: properly a name taken from one's father; but applied generally to such names as express descent from a parent or ancestor. In Sanskrit, Greek, and Latin, patronymics are very numerous. They may be derived from the name of a father, mother, grandfather, or remoter ancestor; e.g. Atrides, i.e., (Agamemnon), son of Atreus; Philyrides, i.e. (Chiron), son of Philyra; Æacides, i.e. (Achilles), grandson of Æacus. The names of the founders of nations also have been used to form a sort of P., as when the Romans are called Romulidæ. In Greek and Latin the commonest terminations of patronymics are *ides* and *is*. Patronymics have no fewer than 13 recognized terminations in Sanskrit. A number of the surnames in use in modern times are patronymics; e.g., Johnson, son of John; Thomson, son of Thomas. Originally these names fluctuated from generation to generation, as still is, or very recently was, the case in Shetland, where Magnus Johnson's son calls himself John Magnusson or Manson. In the course of time, it was generally found more convenient to take a surname from one well-known ancestor, which should descend unchanged to the children of the bearer of it. The termination *s* is sometimes used as equivalent to *son*, as in Jones, Rodgers. To patronymics belong Norman, Highland, Irish, and Welsh surnames with the prefixes *Fitz*, *Mac*, *O*, and *Ap*, respectively. In many cases the *Mac* of the Highlands of Scotland ceased to have a fluctuating character only a few generations ago. In 1465, an act of the parliament of Ireland was directed against the use of patronymics. Every Irishman dwelling betwixt or among Englishmen in the counties of Dublin, Myeth, Uriel, or Kildare, was ordered 'to take to him an English surname of a town, as Sutton, Chester, Trym, Skryne, Corke, Kinale; or color, as White, Blacke; or arte or science, as Smith or Carpenter; or office, as Cooke or Butler; and that he and his issue should use the same.' In Wales it was long the practice to use a string of ancestral names, each with the syllable *Ap* prefixed to it. See NAME.

## PATROON—PATTER.

**PATROON**, *pá-trón'*: holder of land received by grant from the Dutch governors of the province of N. Y., and subsequently confirmed by the English authorities. These grants carried certain manorial privileges and involved the rights of entail. Large areas in Albany, Rensselaer, Delaware, Greene, and Columbia counties, and smaller portions of other counties, were settled under this system. Rensselaerswyck, the largest manor, contained about 436,000 acres, and there were many others of great extent. The tenants could buy and sell their holdings, but were obliged to pay an annual fee of about 2 per cent. of the value of the property, and return the P. about one-thirtieth of the money obtained from its sale. The fee was payable in produce or money. The tenants were dissatisfied, but there was no open opposition till the Dutch settlers on the e. of the Hudson river were superseded by people from New England, who attempted to bring the land under the jurisdiction of Mass., and to invalidate the claims of the patroons. About 1745, and again soon after the revolution, the feeling was intense. Various laws were passed 1779 and 1785, but very little relief was obtained. On the death of Stephen Van Rensselaer (q. v.) 1839, his successor endeavored to collect the rents which he had allowed to fall behind, which amounted to about \$400,000, and which the tenants had expected would be cancelled. The tenants, known as anti-renters, organized to resist payment. Associations were formed in 17 counties, the efforts of the patroons to eject the tenants resulted in bloodshed and great excitement, and in Delaware co. there was a general insurrection. The assoc. became a powerful factor in politics and secured favorable legislation. The trouble lasted 7 years, at the end of which period a modification of the claims of the patroons with action by the legislature and the courts led to a settlement. The new state constitution, adopted 1846, contained articles abolishing feudal tenures, pronouncing all lands in the state allodial, and prohibiting the renting of land for agricultural purposes for a period exceeding 12 years. Over 50 persons who had been imprisoned for connection with the uprisings were pardoned 1847. The land troubles in Ireland since 1880 have many points of resemblance with those above described. **PATROON'SHIP**, office or authority of a patroon.—See VAN RENSSELAER, KILLIAN.

**PATTEE**: see **PATEE**.

**PATTEN**, n. *păt'tèn* [F. *patin*, a clog, a high-heeled shoe—from *patte*, a paw: Fin. *patina*, a shoe of birchwood: It. *pattino*, a skate, patten]: a wooden sole or sandal, with an iron ring beneath, worn by women under their shoes to protect the feet from wet; the base of a column or pillar.

**PATTER**, v. *păt'tér* [a word imitative of sound expressed by *pat*, *pat*: F. *patatras*, a word imitative of the noise of things falling or rolling]: to strike and make a sound like *pats* or slight blows repeated often and quickly, as falling drops of rain. **PATTERING**, imp.: **ADJ.** making a quick succession of slight blows, as, *pattering feet*, *pattering rain*. **PATTERED**, pp. *-tèrd*.

## PATTER—PATTERSON.

**PATTER**, n. *pät'tèr* [corrupted from F. *patois*, country speech: but probably only imitative of the *patter* of rain]: the dialect or manner of speech of a class, as thieves' *patter*. **PAT'TERER**, n. *-èr-èr*, one who talks the language of his class. *Note.*—It has been suggested that *patter* originated in the repeating of prayers, i.e., paternosters.

**PATTERN**, n. *pät'tèrn* [F. *patron*, master of a ship or workshop, a pattern being the inanimate master by which the workman is guided: Dut. *patroon*, a model]: an original proposed for imitation; that which is to be copied or imitated; a sample; anything cut out or formed into a shape to be copied; a specimen; an example: V. in *OE.* to make in imitation of; to copy.

**PATTERSON**, *pät'èr-son*, **DANIEL TOD**: naval commander: 1786, March 6—1839, Aug. 15; b. Long Island. In 1800, he was midshipman under Capt. Bainbridge on the frigate *Philadelphia*, when that vessel ran aground near Tripoli and was captured. He remained a prisoner at Tripoli until 1805. In 1813 he became commander, and the next year conducted the naval force at the battle of New Orleans. On the island of Barataria, he destroyed the works of the pirate Lafitte. 1826-28, he had command of the *Constitution*. After 1836, until his death at Washington, he had charge of the navy-yard at Washington.

**PATTERSON**, **JOHN**: 1744-1808, July 19; b. New Britain, Conn. He graduated from Yale 1762, taught school, studied law, began practice, and became a justice of the peace at New Britain, Conn. In 1774 he removed to Lenox, Mass., and the same year became a member of the provincial congress, to which he was returned the following year. With a company which he raised in Berkshire co. within 18 hours of the reception of news from the battle-field of Lexington, he participated in the battle of Bunker Hill. He was engaged in several important battles, served with great credit throughout the war, and was promoted brig.gen. 1777, and maj.gen. 1783. He assisted in the suppression of Shays' rebellion 1786. Removing to Lisle, N. Y., he became a judge, was a member of the N. Y. state assembly 1792, of the constitutional convention 1801, and of congress 1803-05. He died at Lisle.

**PATTERSON**, **ROBERT**: 1753-1827, Aug. 5; b. Penn. When 22 years of age he settled at the present site of Georgetown, Ky., where he aided in erecting a fort. In 1779 he put up the first house in what is now Lexington, Ky.; was in several expeditions against hostile Indians, and rose to the rank of colonel. He owned one-third of the land which formed the original area of Cincinnati, and was one of the first settlers of Dayton, O., near which he died.

**PATTERSON**, **ROBERT**: 1792, Jan. 12—1881, Aug. 7; b. Cappagh, Tyrone co., Ireland. When quite young he came to Philadelphia. He served in the war of 1812 as 1st lieut., and then became a manufacturer and entered politics. He was maj.gen. of vols. in the Mexican war, and was prominent in the battle of Cerro Gordo. At the opening of the civil war he was maj.gen. of troops enlisted for 3

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months, was stationed near Harper's Ferry to prevent the union of the Confederate forces under Johnston and Beauregard, but failed to accomplish the purpose and thus opened the way for the defeat of Gen. McDowell's forces at Bull Run. P. justified his failure by asserting that he had been instructed to wait for orders from Washington. At the close of his period of enlistment he retired to Philadelphia, where he conducted an extensive manufacturing business until his death. He published *A Narrative of the Campaign in the Shenandoah* (1865).

PATTERSON, ROBERT, LL.D.: 1743, May 30—1824, July 22; b. county Down, Ireland. He came to the United States 1768, commenced teaching in Penn., and was principal of an acad. in Wilmington, Del., 1774. He served in the revolution as military instructor, assistant-surgeon, and in other capacities, and 1779—1814 was prof. of math. in the Univ. of Pennsylvania. For some years he was an officer in the Philadelphia city govt., and 1805, by appointment of Pres. Jefferson, became director of the mint, which office he retained till his last illness. He was pres. of the American Philosophical Soc. 1819 till his death; edited various educational works; and published *The Newtonian System* (1808), and an *Arithmetic* (1819). He died in Philadelphia.

PATTERSON (BONAPARTE), ELIZABETH: first wife of Jerome Bonaparte, youngest bro. of Napoleon I.; 1785, Feb. 6—1879, Apr. 4; b. Baltimore, Md.; daughter of William Patterson, a north of Ireland man, who had become, as owner of a line of ships, the wealthiest citizen of Md., except Charles Carroll of Carrollton. She was but 18 years old and young Bonaparte 19, when a love match was made, in spite of her father's opposition and the protest of the French consul; and the marriage was celebrated, 1803, Dec. 24, with a ceremony performed by the Rom. Cath. bishop, bro. of Charles Carroll, and a contract drawn by Alexander Dallas, with every precaution as to formality, witnesses, etc. Jerome's brothers, Joseph and Lucien, advised the young husband to adopt the country of his beautiful wife, and made efforts to secure him a provision adequate to living in the United States. To Napoleon, who was implacable toward any such marriage for his brother, the affair was most offensive, and when Jerome sailed with his wife, 1805, Mar., and reached Lisbon, a French frigate prevented their landing, and after he left her to go to Paris, she was compelled to take refuge in England—where her son, Jerome Napoleon, was born, 1805, July 7; and she never again saw her husband. The pope refused to dissolve the marriage, but Napoleon's denial of its legality and influence with his brother secured Jerome's marriage, 1807, Aug. 12, to Catherine of Würtemberg. The rejected wife had returned to the United States. Under Napoleon III., the legitimacy of her son's birth was recognized, but her suit for a share in Jerome's estate denied. She was alienated from her son by his marrying precisely as his father had done; and, spending much of her time in Europe, she saw the downfall of Na-

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oleon III., and urged her grandson's claims in France, he having served with distinction in the French army. A woman of great beauty, noble manner, and brilliant conversational powers, she suffered the sorrows of pride, became misanthropic, and though rich was penurious.

PATTESON, JOHN COLERIDGE, D.D.: bishop and martyr of the Melanesian Islands: 1827, Apr. 1—1871, Sep. 20; b. London: son of Justice John Patteson, and grand-nephew of the poet Samuel T. Coleridge. He was student at Eton and Oxford; graduated 1848; became fellow of Merton College 1852; studied Arabic and Hebrew at Dresden; was curate at Alfington 1853-55; then sailed with Bp. Selwyn to New Zealand. After work there, he left with the bp., 1856, in the mission ship *Southern Cross*, for the scene of his labors, the Loyalty, New Hebrides, Banks, Santa Cruz, and Solomon groups of islands,—his children, as he called the natives, dwelling 'in 200 islands.' In 1861, he was ordained bp.; 1867, established at Norfolk Island a college for native teachers from all the islands. After 1870, he was more or less ill from his labors as head of the college, sole tutor and steward, and primary schoolmaster all at once—these charges united with those of bishop and theological prof., with interludes of voyages which involved intense anxiety and watchfulness, and subjected him to the exhaustion of the tropical climate. His work was greatly complicated and often frustrated by the outrageous slave trade that grew up in 1870-1, to supply the white planters of Queensland and the Fiji Islands, under the name 'contract labor.' Besides the 'snatch-snatch' vessels (some of which carried an effigy missionary as a decoy, there were 'kili-kill' vessels, as the natives named them, pushing a tortoise-shell trade by aiding some of the more savage islands in making decorative collections of skulls. From the natural mistake and vengeance of the persecuted people, Bp. Patteson met his death at Nukapu, one of the Santa Cruz group. He was a man of much success in his work, rare beauty of character, breadth of mind, and self-denying zeal. See *Life* by Charlotte M. Yonge (1873).

PATTI, *pât'tè* or *pât'è*, ADELINA MARIA CLORINDA operatic singer of Italian extraction b. Madrid, 1843, Apr. 9. After a course of professional study, she sang at an early age in New York. Her *début* in London was in 1861 as Amina in *La Sonnambula*; and she has ever since held rank as one of the first singers of the day. Her voice is an unusually high soprano, of rich bell-like quality, and remarkable evenness of tone; to these qualities she adds purity of style and high artistic finish. Equally at home in tragic tenderness and the vivacity of comedy, she has sung with success also in oratorio. On the continent of Europe, as well as in Britain, she has won golden opinions, receiving 1870 the order of merit from the emperor of Russia. Her greatest success is generally considered to be in the part of Marguerite in Gounod's *Faust*. 1863, May, she married the Marquis de Caux, from whom she was divorced 1877, and who died 1889; and 1886 she married Signor Nicolini, the tenor singer. Her home is Craig-y-nos castle, near Swansea.

## PATTI—PATTISON.

**PATTI, CARLOTTA:** 1840-1889; b. Florence, Italy, sister of Adelina M. C. P. She also was a leading vocalist, though a slight lameness prevented her from appearing much in opera. Her voice was a soprano of unusual compass, and of clear silvery quality, and much power in the upper register. Her peculiarly high notes, and a graceful *abandon* of manner, brought her into favor with the public, though in quality of tone she did not equal her sister. After gaining high repute in the United States, she appeared in London 1862. In 1879 she married the 'cellist, Ernst de Munck.

**PATTINSONIZE**, v. *păt'in-son-îz* [after the inventor, H. L. *Pattinson*, of Newcastle-on-Tyne, England]: to treat ores for the separation of silver from lead. By the ordinary process of cupellation, it does not pay to treat lead containing less than 20 oz. of silver to the ton for the purpose of extracting the silver, but by Pattinson's process that containing as little as 3 oz. per ton may be profitably worked.

**PATTISON**, *păt'î-son*, **DOROTHY WYNDLOW (SISTER DORA)**: notable member of the (Prot.) Sisterhood of Good Samaritans, England: 1832, Jan. 16—1878, Dec. 24; daughter of the Rev. Mark James P., rector of Hauxwell, Yorkshire. Though of remarkable beauty, grace, and vivacity, and under no necessity to leave home, she chose to extend the home lessons of charity by exiling herself as village schoolmistress in Little Woolston, 1861, and there gave her leisure to nursing the sick, having, at her father's wish, relinquished her desire to accompany Miss Nightingale to the Crimea. Overworking herself, she went as an invalid to Redcar, where she became better acquainted with the Good Samaritans at Coatham, and joined them 1864. The sisterhood is one of the 'secular,' i. e., devoted to active life, not contemplative, and apparently take no life-long vows, nor any but obedience to their pastor and the 'sister in charge.' The scenes of her devoted work were the Cottage Hospital at North Ormesby, and—from 1865—at Walsall (pop. 35,000) in the coal and iron district, South Staffordshire, where much misery existed and frequent accidents occurred. At one time, she had sole charge of a small-pox hospital. Her charitable work took in the whole town, including the most abandoned classes. For her many labors, lovely traits, triumphs of tact and skill, and unwearied self-denials, the reader is referred to *Sister Dora* by Margaret Lonsdale (New York 1880).—**MARK PATTISON**, scholar and author: 1813-1884, July 30; bro. of Dora. He graduated at Oxford 1836; fellow of Lincoln Coll. 1840; rector 1861; examiner, and educational commissioner to Germany, 1848 and 53. Author of *Tendencies of Religious Thought in England*, 1688-1750 (1860); *Annotations on Pope's Essay on Man* (1869); *Life of Isaac Casaubon* (1875); *Life of Milton* (1880); *Milton's Sonnets, with Notes* (1882).—His wife, Emilia Frances Strong, was art critic of the *Academy*, and author of *The Renaissance of Art in France* (1879), illustrated by herself.



## PATTON.

PATTON, *păt'on*, FRANCIS LANDEY, D.D., LL.D.: educator: b. Warwick, Bermuda, 1843, Jan. 22. He studied some time at University and Knox colleges, Toronto; graduated at Princeton Theol. Seminary 1865; became pastor of Presb. churches at New York 1865, Nyack 1867, and Brooklyn 1871; and was chosen prof. of theol. in the Presb. Theol. Seminary, Chicago, 1871. He held this professorship till 1881, and in the meantime edited the *Interior* 1873-76, was pastor of the Jefferson Park Presb. Church 1874-81, was one of the chief prosecutors of Prof. David Swing, who was charged with heresy before the Chicago presbytery, and was moderator of the General Assembly 1878. In 1881 he was elected Stuart prof. of the relation of philosophy and science to the Christian religion at Princeton Theol. Seminary (a chair created expressly for him), and also prof. of ethics in the College of New Jersey, and 1888 succeeded James McCosh, D.D., LL.D., as pres. of the latter institution. In 1891-2 he was conspicuous in his opposition to the action of Union Theol. Seminary, New York, in supporting Charles A. Briggs, D.D. (q.v.), its prof. of biblical theol., who had been charged with heresy because of utterances in his address at his induction to the office. He received the degree D.D. from Hanover College, 1872, and LL.D. from Wooster Univ. 1878. He resigned the presidency of the university and became president of Princeton Theol. Seminary, both in 1902. Besides contributions to periodical literature and addresses, P. has published *Inspiration of the Scriptures* (Philadelphia, 1869), and *Summary of Christian Doctrine* (1874).

## PATTY—PAUCITY.

**PATTY**, n. *păt'tŭ* [F. *pâté*; OF. *pasté*, a pie]: a little but savory pie; a pasty. **PATTY-PAN**, a pan to bake a little pie in.

**PATULOUS**, a. *păt'ŭ-lŭs* [L. *patŭlus*, standing open—from *patērĕ*, to lie open]: slightly spreading open.

**PATUXENT**, *pa-tŭks'ĕnt*, RIVER: stream in Md., rising 20 m. e. of Frederick City; and after a s.e. course of 90 m. emptying by a broad estuary into Chesapeake Bay.

**PAU**, *pō*: flourishing town of France, cap. of the dept. of Basses-Pyrénées, on the right bank of the Gave-de-Pau, 105 m. s.w.e. of Bordeaux. It occupies a rocky height, cloven by a ravine through which a streamlet flows into the Gave-de-Pau: the two portions are united by a high bridge. Toward the s. Pau commands most magnificent views of the w. Pyrénées; indeed, for mountain views its situation is hardly surpassed by that of any town in France. As seen from this town, the distant Pyrénées rise in peaks, cones, and serrated ridges, and present an outline varied and strikingly beautiful. The town contains a palace of justice, a promenade, Royal Square, with a bronze statue of Henri IV., beautiful theatre, university-acad., museum, and library of 25,000 vols. Linen and cloth manufactures are chief industries; in the vicinity, Jurançon wine (good but strong) is grown. Many swine are fed in the vicinity, and from the pork the famous *Jambons de Bayonne* are made. Pau is a favorite resort of the English, especially during winter, and is a general rendezvous for those who wish to explore the Pyrénées. Pop. (1901) 34,268.

The principal building of Pau, and that to which it owes its existence, the old castle on the ridge overlooking the river, forms both the most conspicuous and most interesting feature of the town. It has five towers, united by an outer wall, and is supposed to have been founded by Gaston de Foix about 1363. Pau was cap. of the kingdom of Bearn, and its castle was the birthplace of the famous Henri IV.

**PAU**, or **PAH**, n. *paw* [a native name]: in *New Zealand*, a strongly fortified inclosure or stockade.

**PAUCHON'TI TREE** (*Isonandra polyandra*): large forest-tree, of same genus with the gutta-percha tree, and producing a substance similar to gutta-percha; abundant in some of the forests at the base of the w. Ghauts in India. It is now supposed that there are several species of *Isonandra* in w. India, the produce of all which is sent to the market as gutta-percha, though it is said that none of the kinds is equal in quality to the true gutta-percha, obtained from *Isonandra gutta*. The wood of the P. tree is very heavy, and its tenacity is equal to that of teak. A P. tree having been tapped in 40 places, from the base to 60 ft. high, has yielded in 12 hours about eight pints of sap, each pint being equal to about a pound of gutta-percha.

**PAUCITY**, n. *paw'sŭ-tŭ* [F. *paucité*—from L. *paucitatem*, a small number—from *paucus*, few, little]: smallness in number or quantity; fewness; scarcity.

## PAUL.

PAUL, Apostle of Jesus Christ: the great apostle of the Gentiles: born at Tarsus, in Cilicia, of Jewish parents, from whom he seems to have inherited the rights of Roman citizenship. Concerning the dates of his birth and death, conjectures have been many and various, but nothing is definitely known. His original name was Saul: the name Paul was, according to one supposition, adopted at his conversion; according to another, his name was in two forms from the first—one Aramaic or Hebrew, the other Latin or Greek (compare Simon Peter, John Mark). We find only the name Paul as used by him or applied to him after he had entered on his apostleship beyond Palestine. Whether he was ever married is not known: I Cor. vii. 8, ix. 5, implied to Tertullian that he had never married, but to Clement of Alexandria and to Origen that he had become a widower. He was educated first in his native city, then in the zenith of its reputation for its schools of literature and philosophy, where he doubtless learned to speak and write Greek; and afterward, to be perfected 'in the law of his fathers,' was sent to Jerusalem, where he studied under Gamaliel (q.v.), a great Jewish doctor of the law; and became one of the strictest, most zealous, and most ardent Pharisees. Whether it was here or at Tarsus that he acquired his knowledge of the philosophy and literature of Greece, is not known. According to the wholesome rule among the Jews, that every person should learn some trade, Saul became a tent-maker, and at this trade he afterward labored at times when requisite during his apostleship (Acts xviii. 3) for his support. A few years after the death of the Lord Jesus, he became, as might have been expected from his training and temperament, a furious adversary of the new sect of Christians. We are told (Acts vi. 9) that the Jews of the Cilician synagogue at Jerusalem were among those who disputed with Stephen; and it is natural to suppose that the young and brilliant zealot, eager for disputation, was conspicuous among the crowd of Jewish students who poured out of their synagogues (of which, according to the Talmud, there were 480 in the holy city), in the insolence of their youth and scholarship, to crush the ignorant followers of the Nazarene. This supposition is rendered highly probable by the fact that he was present at the martyrdom of Stephen, which followed almost immediately, having charge of the raiment of them that slew him. The youthful Saul then became a prominent actor in the great persecution of the Christians that broke out at Jerusalem. The mysterious events that led to and attended his conversion, familiar to all readers of the Acts of the Apostles, need not be recapitulated here. After a solitary sojourn in Arabia—perhaps to calm his perturbed spirit in communion with God, and solemnly to prepare himself for his new mode of life—on his return to Damascus, he entered fully on his apostolic labors. Naturally, he became an object of intense hostility to the Jews in that city. They resolved to kill him; but his friends contrived a way of escape, and he fled to Jerusalem, where at first he was received with

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distrust by the disciples; but afterward, through the kind offices of Barnabas, with great cordiality. He now 'spoke boldly in the name of Christ,' disputing also against the 'Grecians'—i.e., the Hellenistic Jews—with dangerous success, for his opponents sought to take his life. Again he was obliged to flee, and betook himself to his birth-place Tarsus, where he seems to have remained till Barnabas brought him to Antioch (not far off), to assist in the great work of evangelization going on in that city. After a short visit to Jerusalem in the year of the famine, A.D. 44, Paul and Barnabas were set apart by the prophets and elders of the church at Antioch for the evangelization of the more distant Jews. From Seleucia they proceeded on their first missionary expedition to the southern districts of Asia Minor, Pamphylia, Pisidia, and Lycaonia, where their preaching of the gospel occasioned great stir, and in some places met considerable success. It is very interesting to notice how gradually the light of Christianity dawned on the mind of the apostle. He did not grasp all at once its grand design. It was not even by abstract reflection that he arrived at it. Circumstances of quite an outward sort forced him to the broad and sublime conclusions of his creed. It was when the Jews of Pisidian Antioch, enraged at his preaching the gospel indiscriminately to their heathen fellow-townsmen as well as to themselves, the ancient covenant people of God, 'contradicted and blasphemed' him, that he boldly announced Christ as the universal Redeemer. After the return of P. and Barnabas to Antioch, they continued to labor in that city for a long time, till, dissensions having arisen about the circumcision of Gentile converts, he, with Barnabas and others, was chosen to go up to Jerusalem, to get the opinion of the apostles and elders there on the question, about A.D. 51. P. and Barnabas then returned to Antioch, where they continued to teach and preach, till a yearning grew up in Paul's heart to revisit his Gentile converts in Asia Minor. In his second expedition, P. was accompanied by Silas instead of Barnabas, and traversed the whole of Asia Minor from s. to n., evangelizing with great success; after which the two missionaries crossed the Ægean and landed in Europe, planting at Philippi, capital of Thracian Macedonia, the first Christian church on that continent. The details of his visits to Thessalonica, Berea, Athens, and Corinth are familiar; and we notice only his appearance at Athens, where, on Mars' Hill, before a crowd of the citizens, among whom were Epicurean and Stoic philosophers, he delivered that magnificent discourse in which he declared to the pagan Athenians the 'unknown' God, presenting Him as the almighty and all-wise Creator, Ruler, and Father of all men in every nation of the earth. On his return to Asia Minor he visited Ephesus, where, as usual, he 'reasoned' with the Jews in their synagogue; sailed thence to Cæsarea, in Palestine, and proceeded to Jerusalem 'to keep the feast;' after which he again returned to Antioch, the centre from which his operations radiated. Thus closed his *second* evangelistic journey.—The third

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journey of P. commenced probably about A. D. 54, and extended over much the same district as the previous one. At Ephesus, where he remained two years and three months, his efforts were powerfully seconded by the eloquence of the great Alexandrian convert, Apollos. Here it is recorded (Acts xix.) that 'God wrought special miracles by the hand of Paul, so that from his body were brought unto the sick handkerchiefs or aprons, and the diseases departed from them, and the evil spirits went out of them.' In explanation of this procedure, unique among the miracles recorded in the New Test., it has been suggested that, as Ephesus was a city noted for its exorcisms, spells, and incantations—the famous *Ephesia Grammata* sold at a high price to the ignorant and superstitious populace—this style of miracle was a natural adaptation to the Ephesian mind with its belief in magic and dæmonism, and was intended to show them, according to their own way of regarding things, the superiority of Christ's power to that of the evil spirits of heathen worship. From Ephesus, P. went up to Jerusalem with a presentiment that heavy evils were about to fall upon him through the ever-maddening malice of the Jews. The Jewish populace were goaded into the wildest fury by the very sight of Paul. The captain of the Roman guard, Claudius Lysias, had to interfere to save him from being torn to pieces; but as forty Pharisees had sworn neither to eat nor drink till they had taken his life, he was sent by night, under strong escort, to the Roman governor, Felix, at Cæsarea, where he was unjustly, being uncondemned, detained a prisoner two years. Having finally appealed to the Roman emperor, according to the privilege of a Roman citizen, he was sent to Rome. On the voyage thither, he suffered shipwreck at Melita (probably Malta), in the spring of A. D. 61. At Rome he was treated with respect, being allowed to dwell 'for two whole years in his own hired house.' His first thoughts were, as usual, directed toward his Jewish brethren in the city; but, on the whole, he made little impression on them. Whether he ever left the city or not cannot be positively demonstrated, but it is believed by many critics, from a variety of considerations, that he did obtain his liberty about A. D. 64, and that he made journeys both to the east and to the west, revisiting Asia Minor and carrying out his long-cherished wish of preaching the gospel in Spain. Meanwhile occurred the mysterious burning of Rome, generally attributed to Nero (q. v.), who found it convenient to throw the blame on the Christians, and in consequence subjected them to a severe persecution. Among the victims, according to the views of many biographers of the apostle, was P., who, according to tradition, suffered A. D. 67 (or 64). Such positive assertions, in the lack of evidence, are without warrant; the most that can be said for them is that they are not improbable. The character and endowments of the apostle Paul have been well spoken of as 'many-sided.' He combined a dignity of nature, above all mere manner, with courtliness of address, and this with simple kindness. He united the highest moral standard, applied to himself and others,

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with tender consideration for the ignorance or infirmity of the weak. He could suffer and die for truth, for principle; yet he could accommodate himself to classes and races, to Jew, or Greek, or Roman. He could crucify himself, yet keep clear of any real ascetism, recognizing every gift of God as good. At one time he would accept benefits; at another, for special reasons, support himself by the work of his hands. He was impetuous, yet held himself in due control. Sincerity, earnestness, glowing enthusiasm, unselfish purity of motive, singleness of purpose, shine through all his life, even when he was at first a persecutor. He knew that his mission, his work, his revelations received, were not less than those of the chief apostles; yet he spoke of his claims only under compulsion and with humility, even with frank acknowledgment of infirmities and former grievous error. His patience, perseverance, courage, endurance, even joyous hopefulness under extremities and physical sufferings, were seemingly unlimited. He honored all, high and low; he honored worthy women, found work for them in the churches, held them in remembrance, though he found it necessary to repress the disorderly or intrusive, in an age when, largely because of masculine error and oppression, women were ignorant and often trivial and shameless. He honored the relationships of life, though (probably married early, according to the rule of orthodox Jews) he remained a widower; and, in view of persecutions, once said of celibacy: 'I suppose this is good for the present distress;' but he denounced those who forbid to marry. He returned Onesimus to his master, but as a servant of Christ only. With all his broad character, he had a correspondingly broad intellect. He, and he alone, in an early period of his missionary career, took in the whole real scope of Christianity as a world-wide spiritual religion, the fruition of the Old Dispensation. It seems to have been largely a process of divine illumination, and perhaps native intuition; how far a logical process it is difficult to judge, since his expositions are much shaped by his early rabbinical reliance on scripture quotation, more or less pertinent, as taking the place of premises. His mind was incisive, going at once to root principles and root truths. Of these, he had a clear and abiding grasp. He was not speculative, and stated opposite truths with no attempt to carry them up to reconciliation in pure reasoning. He was not æsthetic; indeed, though his first thirteen years were passed amid the grand scenery of Tarsus, and his after travels were wide, he draws scarcely any imagery from nature; yet his spiritual vision and fervor often lifted him to unsurpassed poetic eloquence. Profoundly contemplative, he was none the less a man of restless enterprise and great executive ability, as witness his ceaseless journeyings, and his planting and care of churches. He was an organizer of men as well as of truth. He was a reconciler of conscientious differences of faith and practice. In all this work, with all his burning zeal, he showed unflinching common-sense and sobriety of counsel. His was a con-

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stant steadiness of conviction and elevation of spirit. He had an enlightened forerunner in the martyr Stephen; yet his work was unique. If anything in the junctures of the world, and especially at the opening of the Christian era, were wanting, it was most strikingly supplied by the raising up of the apostle Paul, to develop the universal religion of Christ and especially to conceive, formulate, and proclaim the great central doctrines of justification by faith and freedom in grace. His work was the necessary, divine complement of that of his Lord and Master; and his doctrine has been repeatedly the great return tide after an ebb of faith.—See *Life and Epistles of St. P.*, by Conybeare and Howson; Baur's *Paulus*; Lipsius, *Der Apostel Paulus* (1869); Renan, *Saint Paul* (1869); Pfleiderer, *Der Paulinismus* (1873; transl. 1878); Farrar, *St. Paul* (2 vols. 1879).

## PAUL III.—PAUL IV.

**PAUL III.** (ALESSANDRO FARNESE), Pope of Rome. 1468, Feb. 28—1549, Nov. 10 (pope 1534—49); b. Carino, in Tuscany. Having been created cardinal, he served in several important trusts, and became Bp. of Ostia and Dean of the Sacred College. On the death of Clement VII., 1534, he was elected pope, at the crisis when the world was alive with expectation of the general council which was to decide all the controversies at that time agitating the public mind of Europe. After some delays, P. convoked the council to meet at Mantua 1542; but it did not actually assemble (in Trent) until 1545. These delays, by some charged on P., were doubtless due in great part to the difficulties of the times. The bull of excommunication and deposition which he issued 1538 against Henry VIII. of England is one of the last examples of the exercise of the temporal power claimed by the mediæval popes. In the contest of Charles V. with the Prot. League in Germany, P. sent a large force to support him, and he opposed the pacification proposed by the emperor on the basis of the Interim (q.v.) P.'s conduct in aggrandizing the fortune of his son, Pietro Luigi Farnese, has been severely criticised by historians; the more so, that this son was born out of wedlock, in the early youth of his father.

**PAUL IV.** (GIOVANNI PIETRO CARAFFA), Pope of Rome: 1476, June 28—1559, Aug. 18 (pope 1555—59); b. Naples, of the noble family Carafa. His early career was distinguished for ascetic rigor. He was appointed Bp. of Chieti, in which see he labored most earnestly for reformation of abuses and for revival of religion and morality. With this view, he established, in conjunction with several congenial reformers, the congregation of secular clergy called Theatines (q.v.), and was himself the first superior. It was under his influence that Paul III. organized the tribunal of the Inquisition in Rome. On the death of Marcellus II., although in his 79th year, P. was elected to succeed. He entered on the wider career of reformation which his new position opened for him with all the ardor of a young man, and with all the stern enthusiasm which had characterized him during life. He enforced vigorously upon the clergy the observance of all the clerical duties, and enacted laws for maintenance of public morality. He established a censorship, and completed the organization of the Roman Inquisition; he took measures for alleviation of the burdens of the poorer classes, and for better administration of justice, not sparing even his own nephews, whom he banished from Rome for their corrupt and profligate life. His foreign relations involved him in labor and perplexity. He was embroiled with Emperor Ferdinand, with Philip II. of Spain, with Cosmo, Grand Duke of Tuscany. Having condemned the principles of the Peace of Augsburg, he protested against its provisions. Under the weight of so many cares, his great age gave way. At his death, the populace broke out into an insurrectionary tumult, which lasted till the conclave for the appointment of his successor.



## PAUL V.—PAUL.

**PAUL V. (CAMILLO BORGHESE)**, Pope of Rome. 1552 Sep. 17—1621, Jan. 28 (pope 1605–21); b. Rome. In early life, he was a distinguished canonist and theologian; and after the ordinary prelatical career at Rome, he rose first to the post of nuncio at the Spanish court, afterward to the cardinalate under Clement VIII. On the death of Leo XI., Cardinal Borghese was elected to succeed him. His pontificate is memorable for the famous conflict with the republic of Venice, into which he was plunged at the outset of his pontifical career. The original dispute was as to the immunity from the jurisdiction of civil tribunals conceded to the clergy, who claimed to be tried by ecclesiastical tribunals alone. This claim the senate resisted; and further causes of dispute were added by a mortmain law, and a law prohibiting the establishment of new religious orders or associations unless with the sanction of the senate. Each party remaining inflexible in its determination, P. issued a brief, directing a sentence of excommunication against the doge and senate, and placing the republic under an interdict, unless submission should be made within 24 days. The senate persisted, and an animated conflict, as well of acts as of writings, ensued, in the latter of which the celebrated Fra Paolo Sarpi on the side of the republic, and on the papal side Bellarmino and Baronius, were leaders. Preparations were even made for actual hostilities; but, by the intervention of Henry IV. of France, the dispute was accommodated, and peace restored 1607, though dissatisfaction afterward arose relative to the nomination of a patriarch. A misunderstanding of similar nature arose between the pope and the crown in France as to the rights of censorship on books, and as to the receiving of the disciplinary decrees of the Council of Trent; but it was removed by mutual explanations. P.'s civil administration was vigorous and enlightened, and he did much for promotion of useful public works, embellishment of the city, restoration and preservation of antiquities, improvement of the museums and libraries, and, above all, for the pious and charitable institutions of Rome.

**PAUL (PETROWITCH)**, Emperor of Russia: 1754, Oct. 2—1801, Mar. 24 (reigned 1796–1801); second son of the unfortunate Peter III. and Empress Catharine II. He became heir-apparent on the death of his elder brother 1763, and succeeded his mother on the imperial throne 1796. The tragical death of his father when P. was still a child, and the neglect and lack of confidence with which his mother treated him, exerted a baneful influence on the character of P., who was kept in compulsory seclusion while Catharine shared the administration of the government with her favorites. In 1776, P., on the death of his first wife, a princess of Hesse-Darmstadt, married Princess Dorothea of Würtemberg, by whom he had four sons—Emperors Alexander and Nicholas, and Grand Dukes Constantine and Michael—and several daughters. After spending some years in travelling with his wife through Germany, France, and Italy, P. was recalled by his mother,

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who assigned to him the palace of Gatchina, 30 m. from St. Petersburg, as his settled residence, while she took his children under her own immediate care. The death of the empress released him from his unnatural restraint, and he ascended the throne with no practical acquaintance with the mechanism of government, and no knowledge of the people whom he was called to rule. A determination to change everything that had existed under the previous reign, and to wreak vengeance on the murderers of his father, were the predominating influences that guided his actions; and his earliest measures, which were the disgrace of his father's murderers, and the pardon of all Polish prisoners, gave hopes of a good reign; but the capricious violence of character and incapacity for business which P. disclosed soon disappointed the hopes that he had awakened. No department of the state was free from his frivolous interference, and no class of the nation exempt from his arbitrary legislation. While he irritated the soldiery by vexatious regulations in regard to their dress, he offended the nobles by imperious enactments as to the ceremonials to be observed in his presence. His foreign policy was marked with similar caprice. After having adopted a system of neutrality in the war between France and the rest of Europe, he suddenly declared in favor of the allied powers, and sent an army of 56,000 men under Suwaroff into Italy. The success of his general encouraged him to send a second army of equal strength to cooperate with the Austrians; but their defeat 1799 induced P. to recall Suwaroff with the Russian troops: and having retired from the allied coalition without having given any reason for his conduct, he quarrelled with England, because its govt. would not comply with his whimsical demand for the surrender of Malta, and for his own recognition as grand master of the Order of Malta, and entered into close alliance with Bonaparte, then first consul. The jealousy and hatred of England by which both were actuated proved a powerful bond of union between them; and in furtherance of their scheme of uniting all the smaller maritime powers into one vast confederation against England, P. concluded a convention with Sweden and Denmark for the purpose of opposing the right insisted on by England of searching neutral vessels. The result was that the English govt. 1801 sent a fleet into the Baltic under Nelson to dissolve the coalition, at the close of March. P. was preparing to give material aid to the Danes, when a conspiracy was formed at St. Petersburg to put a stop to the capricious despotism under which all classes in Russia were groaning. The conspirators, including Count Pahlen, the most influential man at court, Gen. Beningsen, Uwarow, and many other distinguished nobles and officers, appear to have intended originally only to force P. to abdicate; but his obstinate disposition led to a scuffle, in which the emperor was strangled.

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PAUL OF SAMOSATA, *sa-mös'a-tá*: Bp. of Antioch: b. at Samosata near the beginning of the 3d c. With the bishopric, he held also the civil office of procurator decenarius, and by some means amassed wealth. Besides incurring some suspicions of wickedness, he was charged with arrogance and vanity, introducing pomp into religious services, and even encouraging his hearers to applaud him by waving handkerchiefs and shouting. He is chiefly known as a heresiarch, with reference to the Trinity and the Divinity of Christ. After three trials he was condemned and excommunicated by a council about A.D. 268, but, owing to the favor extended to him by Queen Zenobia, he persisted in keeping his episcopal residence and state until the defeat of the queen, when he was further deposed by the Emperor Aurelian. His church was divided by his heresy, which for some time had followers, known as Paulians, Paulianists, or Samosatians. His doctrine was that God is a unit; the Son and the Holy Spirit are respectively the energy or wisdom and the animating power of God, impersonal; they were latent in Him until the creation, when they went forth into action, and may be figuratively called the Son and the Spirit. The man Jesus was, indeed, begotten of the Virgin Mary by the Spirit, to bring the great salvation, but had not a twofold nature; the divine reason so actuated him that he was raised above ignorance and sin, and he may be called God or the Son of God. His pre-existence was only in the divine purpose.

PAUL (OR PAOLO) VERONE'SE: see CAGLIARI, PAOLO.

PAUL THE DEACON: see PAULUS DIACONUS.

PAUL, VINCENT DE (SAINT): one of the most eminent saints of the modern Rom. Cath. Church: 1576, Apr. 24—1660, Sep. 27; b. at Ranquines, in the diocese of Dax; of humble parentage. The indications of his ability led to his being sent to school at Toulouse. He became an ecclesiastical student, and was admitted to priest's orders 1600. On a voyage from Marseille to Narbonne, his ship was captured by corsairs, and he and his companions were sold into slavery at Tunis, where he passed through the hands of three different masters. The last of these, a renegade Savoyard, yielded to the pious exhortations of Vincent, resolved to return to the Christian faith, and with Vincent, made his escape from Barbary. They landed in France 1607. Having gone thence to Rome, he was intrusted with an important mission to the French court 1608, and continued to reside in Paris as the almoner of Marguerite de Valois. The accident of his becoming preceptor of the children of M. de Gondy, commandant of the galleys at Marseille, led to his being appointed almoner-general of the galleys 1619. It was at this time that the well-known incident occurred of his offering himself, and being accepted, in the place of one of the convicts, whom he found overwhelmed with grief and despair at having been compelled to leave his wife and family in extreme destitution. Meanwhile he had laid the founda-

## PAUL.

tion of what eventually grew into the great and influential congregation of Priests of the Missions; an association of priests who devote themselves to the work of assisting the parochial clergy by preaching and hearing confessions periodically in those districts to which they may be invited by the local pastors. The rules of this congregation were finally approved by Urban VIII. 1632; and in the following year the Fathers established themselves in the so-called Priory of St. Lazare, in Paris, whence their name *Lazarists*. From this date, his life was devoted to the organization of works of charity and benevolence. To him Paris owes the establishment of the Foundling Hospital, and the first systematic efforts for the preservation of the lives, and the due education of a class theretofore neglected, or left to chance charity. The pious Sisterhood of Charity is an emanation of the same spirit, and Vincent was intrusted by St. Francis of Sales with the direction of the newly-founded order of Sisters of the Visitation. The queen, Anne of Austria, warmly rewarded his exertions; and Louis XIII. chose him as his spiritual assistant in his last illness. He was placed by the queen-regent at the head of the *Conseil de Conscience*, the council chiefly charged with direction of the crown in ecclesiastical affairs; and the period of his presidency was long looked back to as the golden era of impartial and honest distribution of ecclesiastical patronage in France. Vincent was not, in any sense of the word, a scholar, but his preaching, which (like that of the Fathers of his congregation of Lazarists) was of the most simple kind, was singularly affecting and impressive. He left no writings but the *Rules or Constitutions of the Congregation of the Mission*, 1658; *Conferences* on these Constitutions, 4to; and a considerable number of letters, addressed chiefly to the priests of the mission, or to other friends, on spiritual subjects. He died at St. Lazare, and was canonized by Clement XII. 1737. His festival is on July 19, the day of his canonization.

## PAULDING.

PAULDING, *paol'ding*, HIRAM: naval officer: 1797, Dec. 11—1878, Oct. 20; b. Westchester co., N. Y.; son of John P. (q. v.), one of the captors, 1780, of Maj. André. He entered the navy 1811, Sep. 1.; was in the battle of Lake Champlain 1814, Sep. 11; and was given a sword and thanks of cong. Oct. 20; served in the Algerine war, and was made lieut. 1816, Apr. 27; cruised 1820-22 in the W. Indies, suppressing piracy; was in command of the schooner *Shark* in the Mediterranean 1834-37; and 1837, Feb. 9, was promoted to commander, and had charge of the sloop *Levant* 1839-41. He became capt. 1844, Feb. 29; was on the *Vincennes*, in the E. Indies 1846-7; and on the *St. Lawrence* 1849-50. He had charge of the navy-yard at Washington, D. C., 1853-55, and of the home squadron 1856-58. In this last service, 1857, Dec. 8, he broke up Walker's expedition against Nicaragua, taking him and 132 men at Punta Arenas in the harbor of Greytown, and sending them to the United States, an act for which Pres. Buchanan censured him, while Nicaragua gave him thanks and a sword. In 1861, Apr., he was appointed commander at the Norfolk navy-yard, and destroyed what public property there could not be protected. He was retired, 1861, Dec. 21; and 1862, July 16, was made rear-admiral on the retired list. He did service at the Brooklyn navy-yard 1862-65; was gov. of the naval asylum at Philadelphia 1866; and port-admiral at Boston 1869. He published *Journal of a Cruise among the Islands of the Pacific* (New York 1831).

PAULDING, JAMES KIRKE: author: 1779, Aug. 22—1860, Apr. 6; b. Pleasant Valley, N. Y.; son of a farmer descended from the early Dutch settlers. Self-educated, and early developing a tendency to literature, he was a friend of Washington Irving, and wrote a portion of *Salmagundi*. During the war of 1812 he published the *Diverting History of John Bull and Brother Jonathan*; 1813, a parody of the *Lay of the Last Minstrel*, entitled *A Lay of the Scottish Fiddle*; and 1814, a more serious work, *The United States and England*, a defense against articles in the *Quarterly Review*. This work attracted the attention of Pres. Madison, and caused the appointment of P. as a member of the board of naval commissioners. In 1817 he published a defense of the southern states and of slavery in *Letters from the South, by a Northern Man*; 1819, a new series of *Salmagundi*; 1822, *A Sketch of Old England, by a New England Man*; 1824, *John Bull in America, or the New Munchausen*, satire on the writings of certain British tourists. This was followed by *Konigsmarke*, novel (1825); *Merry Tales of the Three Wise Men of Gotham* (1826); *The New Pilgrim's Progress* (1828); *Tales of a Good Woman* (1829); *Book of St. Nicholas* (1830). These works, mostly humorous and satirical, had various degrees of local popularity; but 1831 he produced *The Dutchman's Fireside*, a novel that was reprinted in England, and translated into French and Dutch; and 1832, *Westward Ho!* which attained similar popularity. These were followed by *Life of Washington* (1835), *Slavery in the United States* (1836), in

## PAULDING—PAULI.

which the institution is defended on social, economical, and physiological grounds. He held at this period the lucrative post of navy agent at New York, and was by Pres. Van Buren appointed sec. of the navy. At the close of Van Buren's presidency, 1841, P. retired to a country residence at Hyde Park, N. Y., where he wrote *The Old Continental*, novel (1846); *The Puritan and His Daughter* (1849); and with his son, a volume of Plays and Fairy Tales. He died at Hyde Park.

PAULDING, JOHN: 1758-1818, Feb. 18; b. New York, At the opening of the Revolution he entered the army, and, though captured three times by the British, served till its close. With Isaac Van Wart and David Williams, 1780, Sep. 23, he captured John André (q.v.), the British spy, near Tarrytown, N. Y., on his return from a meeting with the traitor Benedict Arnold. As leader of the party P. intercepted André, who first represented himself as a British officer and afterward showed a pass from Arnold. A search revealed the fact that André had concealed upon his person a plan of the West Point fortifications, and other important papers in Arnold's handwriting. Indignantly refusing an offer of a great reward for his liberation, the three patriots promptly delivered their prisoner at the American post at North Castle. They neither claimed a reward nor left their names. Gen. Washington was much interested in the case, and recommended congress to give a silver medal to each of the three soldiers. This was done and an annuity of \$200 was granted. P. died in Staatsburg, N. Y. His remains are interred in the churchyard of St. Peter's near Peekskill, and the city of New York placed a monument over his grave 1827.

PAULI, *pow'le*, GEORG REINHOLD: German historian: 1823-82; b. Berlin; studied philol. and philos. in Berlin Univ.; explored (1847) libraries in England and Scotland for the *Historical Memorials of Germany*, of Perth; 1849-52, special sec. of Bunsen, Prussian minister to England; 1855, asst. prof. Berlin Univ.; 1857 prof. of hist. at Rostock; 1859, the same at Tübingen; 1869 until his death, at Göttingen. Among his works are *King Alfred and His Place in the History of England* (1851; two English translations); *History of England* (1853-58), from the 12th c. to the beginning of the 16th c., forming vols. III., IV., V. of the work begun by Lapenberg; *Scenes of Ancient England* (1860); *History of England since the Treaty of Peace, 1814-15* (1864-67); *Simon de Montfort, Count of Leicester, Creator of the House of Commons* (1867); *Critique of the Confessio Amantis* of Gower, 3 vols. (1857). His severe criticism of the Würtemberg govt. in the Prussian Annual, about 1866, caused him to be retired to a small seminary of Schönthal, but general opinion was in his favor, and the Prussian govt. appointed him prof. of hist. in the Univ. of Marburg. Bohn's select library has a translation from Pauli entitled *Oliver Cromwell*.

## PAULICIANS—PAULINE.

PAULICIANS, *paw'-vish'anz*: ancient sect of the Eastern Empire, who, by Rom. Cath. writers, are reckoned an offshoot of the Manicheans (q.v.). According to Peter of Sicily and Photius, the sect originated in the 4th c., in Armenia from two brothers, named Paul (from whom it is alleged to have received its name) and John. Others trace it to an Armenian named Paul, who lived under Justinian II. The P. were at all times treated with much suspicion, and repressed with great severity, by the eastern emperors; Constans, Justinian II., and Leo the Isaurian especially labored to repress them; indeed, excepting Nicephorus Logotheta (802-811), it may be said that all the emperors, with more or less rigor, persecuted them. Their greatest enemy, however, was Theodora (841-855), who, having ordered that they should be compelled to return to the Greek Church, had all the recusants cruelly put to the sword or driven into exile. A bloody resistance, and finally an emigration into the Saracen territory, was the consequence; and it is from the Paulician settlers in Bulgaria that the Manichean doctrines which tinged the opinions of most of the mediæval sects are supposed by Rom. Cath. historians to have found their way into the eastern provinces of the Western Empire. Even so late as the 17th c., according to Mosheim (II. 238), there was a remnant of this sect in Bulgaria.

A more probable view of the character and doctrines of the P. has been forcibly presented by such modern writers of high repute in ecclesiastical history as Gieseler and Neander. This assigns their origin to Constantine of Mananalis (near Samosata), an Armenian, in the latter part of the 7th c. (d. about 684), who had received a present of two volumes—one containing the four gospels, and the other the epistles of Paul—and who afterward assumed the name of Paul, in testimony of veneration for that apostle. The distinctive characters of his doctrine and that of his followers were the rejection of the worship of the Virgin, the saints, and the cross, denial of the material presence of Christ in the Eucharist, refusal of an ordained ministry, and assertion of a right freely to search the Scriptures. Their moral precept and practice, at least under Constantine, were pure and high. They were greatly averse to image-worship. They were currently understood to hold a doctrine of dualism, so that the charge of Manicheism, brought against them by their persecutors, was probably not wholly false, though much exaggerated. After 835, many of them who had previously been driven into Armenia, developed there among the Saracens an organization more political than ecclesiastical, and had able military leaders, and founded new settlements. After the opening of the 13th c. the P. disappeared from history; but were represented in branch or descendent sects in France and Italy, among which were the Patarini, Cathari, and Albigenses.

PAULINE, *paw'lin*: pertaining to the Apostle *Paul*, as, *Pauline* epistles.

## PAULINE EPISTLES—PAULINUS.

**PAULINE EPISTLES**, n. *paw'lin*: fourteen epistles of the New Testament, 13 of which commence with the apostle Paul's name, the 14th opening abruptly without any intimation as to the writer, though the detached title 'The Epistle of Paul' has been prefixed to it. Its author was more probably Apollos than Paul. Of the other 13, five (Rom., Ephes., I and II Tim., and Titus) have only Paul's name attached; four (II Cor., Phil., Col., and Philem.) are from Paul and Timothy; two (I and II Thess.) are from Paul, Silvanus, and Timotheus (Timothy); one (I Cor.) from Paul and Sosthenes, and one (Gal.) from Paul and 'all the brethren that are with me': see **PAUL**, Apostle of Jesus Christ.

**PAULINISM**, n. *paw'lin-izm*: in *chh. hist.*, a term introduced to denote the body of teaching found in, or deducible from, the writings of St. Paul.

**PAULI'NUS OF NOLA**, *nō'lâ*, **SAINT** (**PONTIUS MEROPIUS ANICIUS**): consul, monk, and finally Bp. of Nola: 353-431; b. Bordeaux, of noble family. His father, a very rich prefect, placed him under tuition of the scholar Ausonius, and he became an accomplished rhetorician. In 378 he was appointed consul suffectus by the emperor, and the next year he went as consularis into Campania, where he became a devotee at the shrine of St. Felix. The influence of St. Ambrose led him to renounce the world and spend his great wealth in charity, and in churchly or other public benefactions, such as building a basilica at Fondi and an aqueduct at Nola. Having been ordained presbyter in Barcelona, 393, he, with his wife—now spiritual sister—led an ascetic life at Nola until 409, when he was chosen bishop. Among his scholarly but not remarkable writings were 52 epistles (some addressed to Augustine and Jerome), 32 songs, a metrical epistle to Ausonius, and some paraphrases of psalms. He encouraged pilgrimages, relic-hunting, and faith in miracles.

**PAULINUS**, *paw-lī'nūs*, **SAINT**, Bishop of York and Rochester: first missionary to n. England: d. 643. He came to England with St. Augustine (first Abp. of Canterbury). Ethelburga, wife of Edwin (king of the Angles n. of the Humber to the Forth), dau. of Ethelbert of Kent, had been converted to Christianity. At her desire, St. P. was allowed to come to Northumbria 625. Her recovery from sickness in answer to prayer, and Edwin's vow in regard to a victory, favorably inclined him to the new religion. A council decided for it; idols were destroyed, and multitudes were baptized by St. P. He was made Bp. of York 628, but fled before an invasion of pagans 633, and d. in the see of Rochester. Bede, 50 years after, describes him as tall, slender, with an aspect venerable and majestic.



## PAULIST FATHERS—PAULUS.

**PAULIST FATHERS:** fraternity of Rom. Cath. priests, formed by Isaac Thomas Hecker, New York, 1858. It is mostly, if not entirely, composed of Americans by birth, and its special object was to use methods adapted to the Amer. people. The members are under one superior, and may leave the soc. at will; the rules are adopted by the brotherhood in council. The corporate name is 'The Missionary Society of St. Paul the Apostle, in the State of New York.' The soc. has a chapter-house, a primary school, and a church edifice on 59th st. and 8th ave., New York, and the parish numbers about 12,000. The school of candidates has been transferred to Washington, D. C., where it is now St. Thomas' Coll., attached to the Rom. Cath. univ., and has 10 students and 3 professors, one of whom is one of the founders, Augustus Hewit, D.D. There are now 25 Fathers, of whom 8 are at present holding missions (revival services) in various parts of the United States. The Cath. Pub. Soc. was founded by this society; it publishes a periodical, *The Catholic World*. The soc. is distinct from the old white-robed order of Paulists or Paulites, still existing in Rome.

**PAULLINIA**, n. *paw-lin'î-ă* [after Professor S. *Paulli* of Copenhagen]: genus of plants, from the powdered seeds of some of the species of which stimulating beverages are made to a large extent in some parts of S. Amer.; the *Paulliniă sor'bilis*, ord. *Sapindăcăă*, yields the seeds from which the Guarana (q.v.) bread or Brazilian cocoa is prepared.

**PAULOWNIA**, *paw-lō'nî-ă* [from the name of Anna *Paulovna*, dau. of Czar Paul I.]: genus of trees, ord. *Scrophularinăă*, tribe *Cheloneăă*. There is only one known species, *P. imperialis*, native of Japan; a large tree, in its general habit closely resembling the Catalpa; it has cordate opposite leaves covered with soft hairs, and bears large terminal panicles of pale-violet or blue and brown-spotted flowers early in spring. The numerous large, pointed capsules persist for one or two winters. P. is a favorite tree for ornamental purposes and is much cultivated in Washington and in Paris, but it does not thrive in more northerly latitudes.

**PAUL'S (ST.) CATHEDRAL**, London: see **ST. PAUL'S CATHEDRAL**.

**PAULUS**, *paw'lûs*, **HEINRICH EBERHARD GOTTLOB:** German rationalist theologian: 1761, Sep. 1—1851, Aug. 10; b. Leonberg, near Stuttgart. He studied oriental languages at Göttingen, and afterward in London and Paris. In 1789, he was called to the professorship of oriental languages at Jena, and 1793 became prof. of geology, on the death of Döderlein. Here he signaled himself by the critical elucidation of the Scriptures of the Old and New Testament, so far as they presented oriental characteristics. The results of his labors may be seen in his *Philologisch-kritischen und historischen Commentar über das Neue Testament* (4 vols. Lûb. 1800-04); *Clavis über die Psalmen* (Jena 1701); *Clavis über den Jesaias*, and other writings belonging to this period. In 1803 he removed to

## PAULUS.

Würzburg; 1808 to Bamberg; 1809 to Nürnberg; 1811 to Ansbach. During these changes, he had ceased to be a professor, and became a director of ecclesiastical and educational affairs, but in 1811 he accepted the professorship of exegesis and ecclesiastical history at Heidelberg. In 1819; he started a kind of historico-political journal entitled *Sophonizon*, in which he continued to write for about ten years. His contributions were marked by weighty sense, moderation, and knowledge of his various subjects, and won great applause. As a theologian, he is generally deemed the type of pure unmitigated rationalism—a man who sat down to examine the Bible with the profound conviction that everything in it represented as supernatural was only natural or fabulous, and that true criticism consisted in endeavoring to prove this. From his numerous writings, we select for mention the following: *Memorabilien* (Leip. 1791–96); *Sammlung der merkwürdigsten Reisen in den Orient* (7 vols. Jena 1792–1803); *Leben Jesu, als Grundlage einer reinen Geschichte des Urchristenthums* (2 vols. Heidelb. 1828); *Aufklärende Beiträge zur Dogmen-Kirchen und Religionsgeschichte* (Bremen 1830); and *Exegetisches Handbuch über die drei ersten Evangelien* (3 vols. Heidelb. 1830–33). P. lived long enough to see his own rationalistic theory of Scripture give place to the ‘mythical’ theory of Strauss, and that in its turn to be shaken to its foundations partly by the efforts of the Tübingen school, and partly by those of Neander and the ‘Broad Church’ divines of Germany. See P.’s *Skizzen aus meiner Bildungs und Lebensgeschichte zum Andenken an mein 50-jähriges Jubiläum* (Heidelb. 1839), and Reichlin Meldegg’s *H. E. G. Paulus und seine Zeit* (2 vols. Stuttg. 1853).

PAULUS, *paŭ'lūs* (or PAUL'LUŠ), LUCIUS ÆMILIUS: Rom. gen.: about B.C. 230–160; b. Rome. His father, Lucius Paulus, fell at Cannæ, his sister married Scipio the Great; and the Æmilian family for 250 years had many distinguished members. He was ædile B.C. 192, pretor B.C. 191, was made consul 182; and the next year, with 8,000 men against 40,000, overcame the Ligurians, corsairs living about the present gulf of Genoa. From his retirement he was entreated by the people to come forth 168, accept the consulship and the command in the then disastrous Macedonian war. At the battle of Pydna, the enemy’s famous phalanx, with a wall of bucklers bristling with pikes, was impenetrable, until P. sent platoons into chance openings, attacking in flank and rear with heavier swords. A rout followed, the craven king, Perseus, fleeing to Samothrace, where he was forced to surrender, and, a year later, was chief captive in one of the grandest triumphal processions ever witnessed in the streets of Rome. Meanwhile P. had visited Greece, and, after settling the affairs of Macedonia, obeyed a decree of the senate in giving up 70 towns of Epirus to pillage, the soldiers entering them on false pretenses, and at the same time seizing 150,000 persons as slaves—a colossal crime, not in the heat of war but in cold blood, accordant with the pitiless Roman spirit, but

## PAULUS ÆGINETA—PAULUS DIACONUS.

wholly discordant with the enlightened virtue of the best men of even that time, including P. himself. How far he was responsible does not appear. He was reputed to be humane to enemies. The spoils, in part those of the miserly Perseus, were so great in silver and gold that the Romans, it is said, were relieved from taxes for 125 years thereafter. But P., having always lived in unselfish simplicity, diverted nothing to his own emolument, and left an estate equivalent to only about \$60,000 of our money. On the very days sacred to his triumphal pageant, he lost his two sons by his second wife, and said to the people, 'The man who led the triumph is as great an instance of the weakness of human power as he that was led captive.' His two discreditable acts as an individual, on record, are, first, the divorce of his first wife, against whom he confessed he could name no special faults; secondly, the inconsistency of ordering a statue of himself set up at Delphi, after all his teaching that 'a mortal should not be elated by prosperity and plume himself on overturning a city or a kingdom.' In his praise it is to be said that he disdained the arts of the demagogue, and, though a patrician, and strict in administration of his offices, he was loved and honored by the people for his honest speech and his virtues. At his funeral, representatives of the nations conquered by him assisted in carrying his bier, 'calling Æmilius their benefactor and the preserver of their countries.' He died at Rome. See *Plutarch's Lives*; and Livy.

PAULUS ÆGINETA, *paw'lūs ěj-ĭ-nĕ'ta*: famous Greek physician of the 7th c., b. in the island of Ægina. His period was during the conquests of the Caliph Omar. Of his life we know almost nothing more than that he pursued his medical studies first at Alexandria, afterward in Greece and other countries. His forte lay in surgery and obstetrics, and in the latter department his practice was great. He abridged the works of Galen, and was deeply read in those of Ætius and Oribasius, but used independent judgment in forming his conclusions. His descriptions of diseases are brief and succinct, also complete and exact. He often grounds his explanation of morbid phenomena on Galen's theory of the cardinal humors; while in surgery his writings abound with novel and ingenious views. His works—the principal commonly called *De Re Medica Libri Septem* (Lond. 1834)—have passed through many editions, of which the best is that completed at Lyon 1567, and they have also had many translators, of whom the best in English is Dr. Francis Adams.

PAULUS DIACONUS, *paw'lūs dī-āk'ō-nūs*, or PAULUS LEVITA (both surnames from his ecclesiastical office): one of the most learned men of his time, and the greatest Lombard historian: about 725—prob. about 797; b. at Friuli, of a noble Lombard family. His father's name was Warnefrid. P. received a superior education at Pavia, at the court of the Lombard king Ratchis, and appears to have continued at court during the reigns of his successors, Aistulf and Desiderius, and to have accompanied

## PAUNCE—PAUPER.

Adelperga, daughter of Desiderius, whose education he had conducted, to the court of her husband, Duke Arichis of Beneventum. For her he wrote, 781, after he had become an ecclesiastic, one of his principal works, his *Historia Romana*, a work of no authority, as it is a mere compilation from works which we possess, but which was greatly used during all the middle ages, as the many manuscripts, recensions, and continuations of it, attest. An ed. of the genuine text is still lacking, but a great part of it is given in Muratori's *Rerum Italicarum Scriptores*, I. (Milan 1728). In 781, P. became a monk of Monte-Casino; but afterward went to France, and won the esteem of Charlemagne by his character and learning. He aided that monarch in his schemes for promotion of learning, and introduced the study of the Greek language into France. He made a collection of homilies from the best sources, at the emperor's desire, known as the *Homiliarium*, often printed between 1482 and 1569, and transl. into German and Spanish. At the request of Angilram, Bp. of Metz, he wrote a history of the Bishops of Metz, *Gesta Episcoporum Mettensium* (printed in Pertz's *Monumenta Germaniæ Historica*, II.), the first work of the kind n. of the Alps, but soon followed by many others. In 787, he returned to his convent, where he remained till his death. In the latter years of his life, he wrote his History of the Longobards (*De Gestis Langobardum*, *Libri* 6), but did not live to complete it, bringing down the history only to the death of Liutprand 744. There are several editions of this work; the best is in the work of Muratori. It is characterized by remarkable candor, and a style unusually pure for that age. The high repute in which this work was long held is attested by the great number of manuscripts and continuations. P. was likewise author of a number of theological works, and of some hymns and letters still extant.

PAUNCE, n. *pawns*: OE. for PANSY.

PAUNCH, n. *pawnsh* [OF. *panche*; F. *panse*; It. *pancia*—from L. *panticem*, the paunch, the belly; Tyrolese, *pantsch*, the belly; *pantschen*, to eat greedily]: the belly and its contents; the largest stomach of a ruminant: V. to take the contents out of the belly; to eviscerate. PAUNCH'ING, imp. PAUNCHE'D, pp. *pawnsht*. PAUNCHY, a. *pawnsh'z*, big-bellied.

PAUPER, n. *paw'pèr* [L. *pauper*, poor: F. *pauvre*]: a poor person; one supported or assisted by his parish (see POOR, THE). PAU'PERISM, n. *-izm*, poverty; indigence; state of being destitute of the means of support. PAU'PERIZE, v. *-iz*, to reduce to a state of poverty or indigence. PAU'PERIZING, imp. PAU'PERIZED, pp. *-izd*. PAU'PERIZA'TION, n. *-zā'shūn*, the act or process of reducing to pauperism.—SYN. of 'pauperism': penury; want; need; poverty; indigence.

## PAUPER COLONIES—PAUSANIAS

**PAU'PER COL'ONIES:** organized settlements of paupers, founded for relieving the poor and ameliorating their condition morally as well as materially, by providing them labor, agricultural as far as possible, compelling them to work, and maintaining among them the utmost economy. Experiments in this direction were made in the 18th c. at Flottbeck, near Hamburg, and at Liancourt in France. Only in the Netherlands, however, has this method of dealing with the pauperism of a nation been seriously and extensively tried. In 1818, under the direction chiefly of General van den Bosch, an association of 20,000 members began planting P. C. in Antwerp in the south, and in Friesland, Overijssel, and Drenthe in the north. The results fell far short of the expectations; the membership declined, the assoc. found their funds inadequate, and had from time to time to draw subsidies from the state. At length, 1859, such was the crisis in the association's finances, that the state took into its own hands the colonies of Ommerschans and Veenhuizen, the soc. retaining under its own administration Fredericksoord and Willemsoord, Klein- and Gross-Watern and Vledder. Then the association had the charge of 2,608 colonists; 89 boarders; 115 orphans; and 207 officials—altogether, 3,054, of whom 1,552 were men. In 1866, the pop. of the Beggar Colonies was 5,475, of whom 4,685 were 'beggars,' 310 old soldiers, and 190 orphans, foundlings, and deserted children. Their live stock counted 835 head of cattle, 134 horses, 1,278 sheep, and 113 pigs; and the land under cultivation measured 2,108 acres. They made their own cloth, and produced yearly 400,000 coffee sacks and 600,000 metres of cloth. In 1875, the govt. colonies contained 2,809 persons.

These institutions are a great expense to the nation, but have reduced the numbers and improved the social condition of destitute people. The position of the colonists has of late improved, and their homes show signs of industry and comfort. When working in the factories, a tenth part of their earnings is placed in a reserve fund, to be paid to them in winter or in time of sickness. The Dutch institution has found imitation on a small scale in Belgium, in France, Bavaria, etc.

**PAUSANIAS**, *pa-w-sā'nī-as*: famous Spartan regent and general, son of Cleombrotus, and nephew of Leonidas: d. about B.C. 467. He commanded the confederate Greeks in the important battle of Plataea B.C. 479, in which the Persians were totally routed, and their leader, Mardonius, slain. He then marched his troops against Thebes, and compelled the inhabitants to give up the chiefs of the Persian party to him for punishment. Elated by this victory, however, he became extremely haughty and vain-glorious, took all the credit to himself, and allowed none to the Athenian generals, Aristides and Kimon, who commanded under him; and treated all the other Greeks as if the Spartans were their lords. Nevertheless, he continued his conquests, capturing Cyprus and Byzantium. Then he began to be false to Greece. He entered into secret

## PAUSANIAS—PAUSE.

negotiations with Xerxes, with the view of becoming ruler, under the Persian monarch, of the whole country, and in his journey through Thrace even adopted the dress and luxurious habits of a Persian satrap, and surrounded himself with a body-guard of Persians and Egyptians. Being recalled, on account of these things, by the Spartans, his former services procured his acquittal. He then returned to Byzantium, where he renewed his traitorous intrigues, was expelled from the city for a criminal assault upon a Byzantine lady, withdrew to the Troad, and there continued his treachery. He was a second time called to account by the Spartan ephors, but again escaped, though with greater difficulty. Yet his passion for the sovereignty of Greece, even at the expense of the national liberties, once more led him into treachery. He tried to stir up the Helots, but was taken in his own net. A Helot betrayed him. When P. found his position desperate, he took refuge in a temple of Athene. Hereupon the magistrates caused the people to block up the doors of the temple with heaps of stones, and left him to die of hunger, his own mother (it is said) depositing the first stone.

**PAUSA'NIAS:** eminent Greek antiquarian writer: b. in the 2d c., native probably of Lydia in Asia Minor. He travelled through almost all Greece, Macedonia, and Italy, also in Asia and Africa; and composed from his observations and researches an Itinerary, *Hellados Periēgēsis*, in ten books, describing the different parts of Greece, and giving an account of the monuments of art and of the legends connected with them. He attempts little of art-criticism properly so-called; he is rather a cataloguer or enumerator. His style is not pure; but in matters of his own observation he is most trustworthy, and his work is, on many subjects, one of our most valuable sources of information. There are numerous editions; the oldest printed Venice 1516 by Aldus; the most recent by J. H. C. Schubart and C. Walz (3 vols. Leip. 1838-40). Translations of P. exist in English, German, and French.

**PAUSE**, n. *paʊz* [F. *pause*, a halt or stop—from L. *pausa*; Gr. *pausis*, a pause, a rest: comp. Sw. *pusta*, to take breath: Norw. *pusta*, to rest awhile]: a cessation, intermission, or rest in something, as in labor, reading, speaking, etc.; a cessation proceeding from doubt, suspense, or fear; a stop or rest; a musical sign which indicates that silence is to be prolonged: **V.** to stop; to halt; to cease for a time either to speak or act; to deliberate. **PAUS'ING**, imp.: **ADJ.** ceasing for a time. **PAUSED**, pp. *paʊzd*. **PAUS'INGLY**, ad. *-lī*, after a pause; by breaks. **PAUS'ER**, n. *-ér*, one who pauses.—**SYN.** of 'pause, n.': stop; suspense; doubt; break; end of a paragraph; halt; rest; hesitation; point;—of 'pause, v.': to stay; wait; delay; intermit; tarry; demur; hesitate.

## PAVE—PAVEMENT.

**PAVE**, v. *pāv* [F. *pavé*, a paving-stone; *paver*, to pave—from *pavē*. L. *pavāre*, to pave—from L. *pavire*, to beat or ram down: L. *pavimentum*, a path or floor made dense by beating and then laid with stones: Gr. *paiō*, I strike]: to make a hard level surface by laying it with stones or other solid material; to cover with stones or flags to make the surface level and hard; to prepare the way or passage. **PA'VING**, imp. flooring with stones: N. the act of laying with stones; a floor of stones. **PAVED**, pp. *pāv'd*: **ADJ.** laid firmly with stones or other solid material. **PAVER**, n. *pāv'vēr*, one who paves. **PAVIER**, n. *pāv'vī-ēr*, or **PA'VIOR**, n. *-ī-ēr*, one whose occupation is to pave. **PA'VIORS**, n. plu. *-ērz*, a building term for thin broad bricks used for paving. **PAVEMENT**, n. *pāv'měnt* [F.—L.]: wood, or other material, adapted for the purpose, and laid as flooring, foot-path, or roadway (see below). **PAVING BOARD**, a number of persons in whom is vested the superintendence and management of the paving of a city, town, or district. **PAVING-STONES**, large prepared stones for paving. **TO PAVE THE WAY**, to do something to facilitate the introduction or completion of a thing.

**PAVEMENT**: stones, or brick, etc., used for flooring of halls, kitchens, and other apartments, and frequently for footpaths; also the stone, wood, or other covering of the roadway of streets. The stones used vary in different districts, according to the geological formation of the neighborhood. P. should be carefully laid on a solid dry foundation, and set in a good bed of concrete or lime, and any joints should be pointed with cement. It may be laid also on small dwarf walls of brick, built to support all the edges: this is a good method for keeping a stone floor dry.

**PAVING OF STREETS** is of early date, and is necessary to any considerable degree of traffic, and is a requisite of advanced civilization. The Romans paved their streets in the same elaborate and solid manner in which they paved their highways: see **ROADS**. Portions of the ancient P. of the streets of Rome are in use at the present day, and the P. of Pompeii remains entire. It is laid with large blocks of stone of polygonal shape (like Cyclopean masonry), very carefully fitted together, and of considerable depth, and below there is a carefully prepared basis, often of several distinct strata. Some of the Italian towns—Florence, e.g.—still have pavement of this description, and no foot-pavement.

The mediæval cities almost all were unpaved till about the 12th c., when the main streets of the chief towns began to be paved with stone. Of stone pavements among the moderns the earliest form was the 'cobblestone' P., of rounded bowlders bedded in the natural surface or in gravel or sand. Roughly-squared blocks in time superseded bowlders, but the wide and irregular joints admitted water to the subsoil, and, as in the cobblestone P., the mud worked up and the stones sank irregularly. The necessity of interposing a bed of gravel or other suitable material between P. and subsoil then was recognized, and at first 6 in., later 12 in., of broken stone was laid as foundation

## PAVEMENT.

for the blocks. Blocks  $4\frac{1}{2}$  to  $7\frac{1}{2}$  in. broad first were used, but blocks of less width were soon seen in practice to afford a better foothold for horses and to have less tendency to rock on the bed: 3 in. was then adopted as the best width for paving blocks. In time concrete superseded broken stone as the foundation. Stone pavements in New York are now laid on a concrete foundation of 6 in. The blocks are of granite, of uniform dimensions—4 in. wide, 10 in. long, 12 in. deep, and they are so laid as to break joint. Over the concrete a thin bed of sand is strewn. On this the courses of blocks are laid square across the street; at street crossings they are laid diagonally, so as to afford good footing to horses passing either way. The spaces between the several courses and between the ends of the stones are filled with clean gravel, and the whole surface rammed; then a composition of coal-tar, pitch, and creasote oil is poured hot into the joints; finally, the pavement is covered with fine gravel.

Wood pavements have mostly gone out of use in the United States: since 1871 different forms of an improved wood P. have been employed in London, and that style of P. is still much used in the British metropolis. The plank foundation has been superseded by a layer of concrete; on this the wood blocks, which are rectangular, are bedded with the fibres vertical, thus constituting a slightly elastic wearing surface on a rigid foundation. The joints are filled with a grout of cement and gravel; sometimes the surface of the wood P. is dressed with a hot bituminous compound, and covered with fine clean grit. Such wood pavements are said to be of 'mineralized wood.' Different sorts of material are used. Pitch-pine and the harder red and yellow deals are the most durable, but are apt to become slippery on the surface from wear; on the whole, either Memel or Swedish yellow deal seems to be regarded by British engineers as the best material. A wood P. lasts about six years in London.

Asphalt was employed for street paving first in Paris 1854, and has since come into use in a very great number of places. The material used throughout Europe is generally a hard limestone naturally impregnated with bitumen, found in certain localities in Switzerland. In the United States asphalt pavements are made of this material, of similar kinds of bituminous rock found in W. Va. and elsewhere, and of artificial combinations of Trinidad or other bitumens with calcareous or silicious substances. The street, having been properly graded, is covered first with a layer of concrete. Over this, in some systems of asphalt paving, is spread a layer of Trinidad bitumen, broken into small pieces, which is then smoothed and consolidated by rolling over it a heavy iron cylinder kept hot by fires inside. Then follows a layer of asphalt rock, powdered, or of an artificial compound; this is applied hot ( $156^{\circ}$ – $200^{\circ}$ ), and spread evenly with a rake by skilled workmen for the whole width of the street to a thickness about  $\frac{2}{5}$  greater than the finished coating is intended to be. Ramming is then commenced with light blows to insure



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equality of compression throughout, and is continued with increased force till the whole is solidified; the surface is then smoothed by moving over it the iron cylinders heated to a dull redness. A few hours after the completion of the work the P. is ready for traffic.

The wear of an asphalt P. is very slow. One in Cheap-side, London, after 14 years of use under exceptionally heavy traffic, was reduced, where not repaired, from its original thickness of  $2\frac{1}{4}$  in. to  $1\frac{3}{8}$  in., and even that reduction was in great part the result of compression.

When either dry or wet the asphalt P. affords good foothold for horses, but when beginning to get wet or when drying, it is 'greasy' and slippery; but this is due probably to dirt on the surface and not to the nature of the material. Sand is strewed over an asphalt P. to remedy the slipperiness; but sand tends to wear out the asphalt: great cleanliness is the best remedy. The asphalt P. is the cleanliest of all pavements; it is noiseless except for the clatter of the horses' feet on it. Compared with other kinds of pavements with regard to the liability of horses slipping and falling on it, asphalt has been shown by actual test to be safer than granite in the proportion of 191 to 132; but, as to the item of slipperiness, the 'improved wood' P. is superior to either in the proportion of 446 to 191 or 132.

The great obstacle in the way of really good pavement in modern streets is the necessity of frequently breaking it up for laying and repairing of pipes for gas, water, electricity, etc. The true remedy—and, in the end, the cheapest—would be to have, in the chief streets at least, sub-ways or tunnels for drains, pipes, and wires, accessible without breaking up the pavement.

PAVIA, *pá-vě'á*: province in Lombardy, Italy; of irregular form, about 40 m. long and at its narrowest 10 m. wide; 1,292 sq. m. The surface is generally level and the soil is remarkably productive. The principal rivers are the Po and the Ticino. Commercial facilities are afforded by two large canals. The live-stock interest is highly developed, and fruit of various kinds abounds. The principal products are silk, cheese, and cattle. The city of Pavia (q.v.) is the capital. The province comprises nearly 200 communes. Pop. (1891) 494,748; (1901) 496,969.

PAVIA: city of n. Italy, cap. of the province of P.; on the left bank of the Ticino, 20 m. s. of Milan, 3 m. above the confluence of the Ticino and the Po. A covered bridge of eight arches connects the city with the suburb of *Borgo Ticino*, on the right bank of the river, and from this bridge the *Strada Nuova* or *Corso*, the principal thoroughfare, leads n. to the outskirts. The city is large, surrounded by walls, and has an imposing appearance, bearing the impress of antiquity. In former times, it was called the 'city of a hundred towers;' but the palace of Theodoric, and the tower where Boëthius wrote the treatise *De Consolatione Philosophiæ*, are no longer standing; among the remaining ones are those of Belcredi and Del Maino, each 169 ft. high. Its oldest church, oldest perhaps in

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Italy, is that of San Michele, whose date of foundation is uncertain, but which is mentioned first 661. The cathedral, containing some good paintings, was begun 1484, but never finished. In a beautiful chapel attached to it are the ashes of St. Augustine, in a sarcophagus ornamented with 50 bassi-rilievi, 95 statues, and numerous grotesques. In the Church of San Pietro in Ciel d'Auro are deposited the remains of the unfortunate Boëthius. The Certosa of P., the most splendid monastery in the world, is 4 m. n. of the city. It was founded 1396, contains many beautiful paintings, and abounds in the richest ornamentation. It has an octagonal cupola, painted ultramarine and enamelled in gold. It was sacked by the French 1796. The monastery church is in the form of a Latin cross, 249 ft. long and 173 ft. wide. The Univ. of P., said to have been founded by Charlemagne 774, was one of the most famous seats of learning during the middle ages. Its efficiency was much increased by Galeazzo Visconti, who bestowed many privileges on it 1396. It consists of numerous colleges, and attached to it are a library of 120,000 vols., numismatic collection, anatomical, nat. history, and other museums, botanic garden, school of the fine arts, etc. The univ. is attended by about 700 students. It has numbered among its professors Alciati, Fidelfo, Spallanzani, Volta, Scarpa, Foscolo, and Monti. The other chief edifices comprise private palaces, theatre, gymnasium, etc. P. has good trade in wine, rice, silk, and cheese.

P., the anc. *Ticinum* (afterward *Papia*, whence the modern name), was founded by the Ligurii; it was sacked by Brennus and by Hannibal, burned by the Huns, conquered by the Romans, and became a place of importance at the end of the Roman empire. Then it came into the possession of the Goths and Lombards, and the kings of the latter made it cap. of the kingdom of Italy. It became independent in the 12th c., then, weakened by civil wars, it was conquered by Matthew Visconti 1345. Its history since is merged in that of the conquerors of Lombardy. Here, 1525, the French were defeated by the imperialists, and Francis I. (q.v.) taken prisoner; but 1527, and again 1528, it was taken and laid waste by the French. It was stormed and pillaged by Napoleon 1796, and came into the possession of Austria by the peace of 1814. Since 1859, it has been included in Italy. Pop. (1901) 35,447.

PA'VIA: see HORSE-CHESTNUT.

PAVILION, n. *pă-vil'yôn*, or *-î-ôn* [F. *pavillon*; Sp. *pabellon*, a tent, a flag—from L. *papilionem*, a butterfly, a tent: It. *padiglione*, a pavilion, a canopy: comp. Gael. *paillinn*, a tent]: large handsome tent: in a *building*, a projecting part of the structure, usually more elevated than the rest, under one roof, often of tentlike form, with the slope of the roof either straight or curved. This form is much used in France—the higher parts of the new buildings at the Louvre are good examples. P. roofs are sometimes called French roofs. Pavilions are often domed and turreted. PAVILION, v. to furnish with tents; to shelter with a tent. PAVILIONED, a. *pă-vil'yônd*, sheltered by a tent.

## PAVLOGRAD—PAWN.

**PAVLOGRAD**, *pāv-lō-grád'*: town of s. Russia, in the govt. of Ekaterinoslav, 38 m. e.n.e. of the town of that name, on the Voltcha, affluent of the Dnieper. It was founded 1780 during the reign of Empress Catharine II., and its first colonists were the Zaporogsky Cossacks. But in 1782 a great portion of the English garrison of Fort Magon in Minorca, chiefly Corsicans, having been subdued by the Spaniards, and being forced by the terms of their capitulation to renounce the English service, obtained liberty from Empress Catharine to settle in Pavlograd. Pop. over 14,000.

**PAVO**, n. *pāv'vō* [L. *pāvo* or *pāvōnem*, a peacock: OF. and Sp. *pavon*: F. *paon*]: a constellation in the southern hemisphere; a certain fish. **PAVONINE**, a. *pāv'ō-nīn*, resembling the tail of a peacock, or formed of its feathers; applied to ores and other metallic products which exhibit the brilliant hues of the peacock's tail. **PAVON'IDÆ**, the family of gallinaceous birds known usually as the *Phasianidæ* (q.v.); denoting sometimes a portion of that family separated from the rest on very slight grounds, the chief distinction being the greater expansion of the tail. See **PEACOCK**: **POLYPLECTRON**.

**PAW**, n. *paw* [Bret. *paó*; OF. *poue*; W. *palf*, palm of the hand, a paw]: the foot of an animal having claws; the hand, in contempt: V. to scrape or draw the fore foot along the ground, as a horse. **PAW'ING**, imp. **PAWED**, pp. *pawd*: **ADJ.** having paws.

**PAWKY**, a., or **PAUKY**, a. *paw'kī* [AS. *pæcan*, to deceive: Low. Ger. *paiken*, to appease by caressing]: *prov. Eng.* and *Scot.*, demurely artful; sly; cunning.

**PAWL**, n. *parol* [W. *parol*; L. *palus*, a pole or stake]: on shipboard, a short bar of wood or iron, or a hook, to prevent the capstan from flying round backward during a pause in the heaving. A similar catch is used in the common windlass.

**PAWN**, n. *pawn* [Icel. *pantr*; Dut. *pand*; Ger. *pfand*; F. *pan*, a pledge: probably connected with L. *pannus*, cloth—the first pledges being wearing apparel: Pol. *fant*, a piece of cloth, a pawn]: any movable property deposited as security for the repayment of a loan of money; a pledge: V. to pledge or give in pledge; to deposit as a security. **PAWN'ING**, imp. **PAWNED**, pp. *pawnd*, pledged; given in security. **PAWN'ER**, n. *-ér*, one who pawns. **PAWNEE**, n. *pawn-ē'*, one who receives property in pawn. **PAWN-BRO'KER**, one who is licensed to lend or advance money on the security of movable property deposited. **PAWNBRO'KING**, trade or business of a pawnbroker (see below). **PAWN TICKET**, a dated receipt given by the pawnbroker for the article received in pledge.

**PAWN**, n. *pawn* [OF. *paon* and *poon*, a pawn at chess: It. *pedone*, a footman; *pedona*, a pawn at chess: Sp. *peone*, a laborer, a pawn: mid. L. *pedōnem*, a foot-soldier]: a common man at chess.

## PAWNBROKING.

**PAWN'BROK'ING:** business of lending money on pawns or pledges. P. appears to have been carried on in England by certain Italian merchants or bankers as early at least as 1200. By an act of 1284, a messuage in London was confirmed to these traders where Lombard Street now is; the name being, according to Stow, derived from the Longobards who used to congregate there for business purposes. Subsequently, these merchant adventurers became known generally by the name of Lombardens. Their wealth became proverbial. Among the richest of them were the celebrated family of the Medici; from whose armorial bearings it is conjectured that the P. insignia of the three balls have been derived. The bankers of Lombard Street appear to have exercised a monopoly in pawnbroking until the reign of Elizabeth. The trade is recognized in law first by the act 1st James I. c. 21 (1603). In the perilous days of Charles I. the goldsmiths were very frequently chosen as custodians of plate and money; which seems to have suggested to them the profitable business of lending on pawns and discounting bills. From this time the oppression and extortion often exercised by pawnbrokers has occasioned much public discussion; and an effort has been made, in Britain and on the continent, to obviate the evil by the establishment of Monts de Piété for advancing small sums to the very poor at moderate interest: see MONT DE PIÉTÉ. In England, after many abortive efforts, a Mont de Piété office was started 1708; but it came to a disastrous end 1731. The bubble mania of 1824-5 gave rise to a similar scheme, in which more than £400,000 was subscribed; but the undertaking miscarried, and the capital was lost. A similar fate attended the Irish Monts de Piété, of which there were eight in 1841. In 1848 all had disappeared except one, which lingered to 1853, when it also closed. The cause of failure is judged to be generally in the great difficulty of conducting a commercial undertaking on charitable principles, with sufficient energy and ability to compete with others originating in the ordinary motives which lead men to engage in trade.

The greatest P. establishment in the world is the Mont de Piété of Paris. It trades with borrowed capital, and with the profits of former years temporarily capitalized. It has been reported to receive in one year 1,431,575 pledges, valued at about \$5,000,000, including renewals, and the average charge was about 15 per cent. per annum. One of the largest offices in England out of London, in one year received 142,835 pledges, valued at £36,560, including renewals, and the average charge was 25 per cent. per annum. Though various circumstances render the difference between the rates really much less than these figures indicate, still there is no doubt that the interest on small loans is lower at the Mont de Piété of Paris than in the P. offices in other countries; but this convenience is limited by the fact of the French establishment taking no loans under three francs.

What used to be called in England the 'dolly shop,' and

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In Scotland the 'wee pawn' system, was carried on by brokers, ostensibly buying and selling. They received articles as bought; there being a distinct understanding that the seller was to have an opportunity of repurchasing within a limited time, at an understood increase of price. The general understanding was a penny per shilling a week; a month being usually allowed to redeem the article. The 'wee' broker was commonly resorted to because the article was below the regular dealer's class of goods. The 'wee pawn' was happily abolished in Scotland years ago.

It hardly admits of dispute that the pawn-shop, in its practical working, is an evil—necessary, it may be, still an evil; and that recourse to it is strongly to be discouraged. There are, doubtless, cases where men are driven to pawn their goods from causes not discreditable, and which do not render it certain that they are on the road to ruin; but such cases are exceptions. Besides making borrowing too easy, and thus encouraging the fatal habit of anticipating income, the pawn-shop is, in nine cases out of ten, the direct or indirect way to the drinking-shop. That 'borrowing dulls the edge of husbandry' applies with a force increasing in geometrical ratio as we descend in the scale of society. Yet so long as improvidence prevails among large classes of society, and so long as even the most prudent are liable to unforeseen accidents, the accommodation of the pawn-shop is to some extent a necessity, and like other public demands will continue to be supplied. The legislature, accordingly, instead of trying to put down P., has wisely confined itself to putting it under stringent regulations preventing as far as possible its abuse.

In Great Britain, by the Pawnbroker's Act, 1872 (which does not affect loans above £10), a pledge is redeemable within 1 yr. 7 days. Pledges pawned for 10s. or less, not redeemed in time, become the property of the pawnbroker; pledges above 10s. are redeemable till sale. The sale must be by public auction. The pawnbroker is allowed to charge as interest  $\frac{1}{4}$ d. per month on every 2s. lent when the loan is under 40s.,  $\frac{1}{2}$ d. per month on every 2s. 6d., when the loan is above 40s. In the United States P. is regulated by the law of the several states. In New York the rate of interest in P. fixed by law is 3 per cent. a month (or any fraction thereof) for the first six months, and 2 per cent. a month for each succeeding month on any loan not exceeding \$100; and 2 per cent. a month for the first six months and 1 per cent. a month for each succeeding month on any loan exceeding \$100. Pledges cannot be sold until after they have been kept one year, and then at public auction by a licensed auctioneer, after publication of at least six days in two daily newspapers designated by the mayor. Pawnbrokers in New York city pay a license fee of \$500 to the city, and are under the direct control of the mayor and his marshal. Their books must be kept open to the mayor, criminal courts, police, and police magistrates.

In 1894, during the prolonged depression of business which had begun in 1882, the Rev. Dr. David H. Greer, of St. Bartholomew's (Prot. Episc.) ch., New York, found

## PAWNBROKING.

that many of the industrious and deserving poor were driven to seek small loans on personal property, especially for the payment of rent, without which they were liable to eviction ; while the high rate of interest charged by the pawnbrokers made redemption of articles pawned practically impossible. Hence he was led to form a plan of aiding the deserving poor in a way to combine philanthropy and investment, the motto being " Philanthropy and 5 per cent.," but with readiness to reduce the return even to 1 per cent., should that be necessary. A capital of \$160,000 was quickly subscribed. Dr. G.'s plan had as one of its first principles to aid the poor man without compromising his self-respect. Wherever possible, money was to be advanced on chattel-mortgages, allowing the borrowers still to use the furniture or other articles pledged. It was required that the person asking the pledge should be known as trustworthy, to guard against the lending of money on stolen property or for any unworthy purpose. The original office-staff consisted of a bookkeeper, an appraiser, who would as needed visit homes, and decide on the value of the article to be pledged, and a recorder to keep record of loans and chattel-mortgages, and especially to make sure that articles pledged were free from other incumbrance. The sums loaned were to reach if needed \$25, \$50, or even in special cases \$100 on each loan. Dr. G.'s plan was also to bring the system into such connection with the Employment Bureau of his church, as to give applicants all possible aid toward self-support. The plan thus formed resulted in the organization of the Provident Loan Soc., which began operations 1894, May 21, with office at 279 Fourth Ave. To 1895, Dec. 31, the soc. had loaned more than \$300,000, of which \$200,000 was still outstanding. The soc. had earned more than 6 per cent. on its contributed capital of \$100,000 after payment of all charges and expenses, including losses. The rules of the society are: that each loan ticket is good for one year only ; loans may be paid by instalments in sums not less than \$1 ; rate of interest 1 per cent. per month or any fraction thereof, this interest not payable by instalments; the loan may be renewed at or before maturity on payment of full amount of interest due. It is at once evident how great must have been the relief afforded by placing this great sum of \$500,000 within 19 months in the hands and homes of the poor ; while the fact that \$400,000 was actually repaid within that time shows how thoroughly deserving were the applicants, and how earnest their desire to repay, when the conditions of the loan were such as to make repayment possible.

## PAWNEES—PAWTUCKET.

**PAWNEES**, *paw-nēz'*: four-fold tribe of Indians now in the Indian Terr. They were known as the Grand, Republican, Tapage, and Loup bands or tribes, and, on the advent of the whites, occupied what is now s. Nebraska and n. Kansas. On the settlement of these states, they ceded their lands in s. Nebraska, 1833, and retired to n. Nebraska, where further encroachments and the depredation of their old enemies, the Sioux, prompted them 1874 to move into the Indian Terr. They are of the same stock as the Arickarees, Ricarees (or Rees), Caddos, Huecos or Waeos, Tawaconies, Wichitas or Pawnee Picts, and probably the Lipans (*li'panis* = old name *panis* for Pawnees) of Mexico. Their traditions run back to the s.e., probably Louisiana, and fainter tradition to the s.w. and 'stone houses' (like the Pueblos?); within the period of American history, they have lost the art of pottery. They lived in earth-covered lodges, raised some maize and vegetables, and are said to have sacrificed prisoners to the sun to promote good harvests. In 1834, the Rev. Samuel Parker, first Amer. Board missionary to Oregon, failing to connect with the fur-caravan for Green river, left his assistants, Messrs. Dunbar and Allis, as missionaries among the P. After the relinquishment of the mission, Mr. Allis continued as govt. teacher and agriculturist. Later, the Soc. of Friends assumed management and the charge of schools. But the wretched condition of the tribes continued until about 1885. As late as 1876 Maj. North found them clothed only in cotton sheets. Their numbers had been greatly diminished by war, small-pox, and cholera, and still are decreasing under improved conditions. In 1870, they numbered about 3,000; in 1885, 1,045; in 1888, 869. In 1888, 225 could speak English; nearly all wore citizen's clothes wholly or in part; there were 98 houses, some superior to those of white settlers; 2,560 acres were cultivated, and 5,200 fenced; and 1885-88 produce had doubled, reaching 2,500 bush. of wheat and 60,000 of corn. The P. have \$30,000 annuity, half in goods, and int. on \$250,000 for lands sold. See John B. Dunbar's hist. of P. in *Mag. Amer. Hist.*, 1880, and George Bird Grinnell's interesting *Pawnee Hero Stories and Folk-tales*, 1889.

**PAWTUCKET**, *paw-tŭk'ēt*: city in Providence co., R. I., 4 m. n. of Providence; notable centre, since 1790, of cotton and other manufactures. It belonged to Bristol co., Mass., until 1861; was enlarged 1874 by the union with it of a portion of the town of n. Providence; and was incorporated 1886. It lies on both sides of P. river, at the head of its navigation, where the stream has a fall of 30 ft., and thus supplies extensive water-power. The situation is beautiful, and the place has a picturesque appearance. The river above the falls is known as the Blackstone. P. has communications by three lines of railroads, and by water, the river having formerly been a place of ship-building and of considerable commerce. Horse-car lines were established 1886; and water-works date from 1878, introduced at a cost of \$1,330,000, besides the expense of a new pumping station, \$150,000, voted 1887, Dec. Very

## PAX.

large imports of coal, lumber, brick, cement, lime, stone, cotton, soda-ash, and laths and shingles, are made, and exports of cotton, scrap-iron, fertilizer, bone, etc. The arrivals of vessels with coal, lumber, etc., number from 6 to 12 daily, during the season of navigation, and the trade amounts to several millions of dollars annually. The city has a very effective fire dept., insurance companies, national and savings banks, a full system of public schools, a public library, newspapers, and large and active churches representing all the chief Christian denominations. In 1900 there were 534 industrial establishments, employing nearly 13,000 persons in the manufacture of yarn, worsted braid, woollens, cotton cloth, wadding, thread, hair-cloth, cardboard, paper bags, machinery, steam fire-engines, bolts, files, tacks, brooms, chemicals, brushes, screws, boots and shoes, belting, thread spools, furniture, manufacturers' supplies, sash and blinds, and gas; besides the products of cloth and yarn printing establishments, of brass, stove, and iron foundries, of bleacheries, and of tanning and currying establishments. The number of cotton and woolen industries (1900) was 30. Among the great concerns are the Conant thread works with over 2,000 hands, capital \$3,000,000; the Dunnell print works, 450 hands; the plush and braid mill of D. Goff and Son, employing 300, and the Union wadding works, 250. Cotton manufacture in the U. S. was begun at P. 1790, by Samuel Slater, who had been an apprentice of Strutt, the partner of Arkwright, in England. He came to New York, 1789, Nov. 18, was brought by Moses Brown to P. 1790, Jan. 18, and after eleven months' work, Dec. 20 started 3 carders and 72 spindles of the Arkwright pattern in an old fulling mill. Brown provided the capital for Almy (his son-in-law), Brown (his relative), and Slater, the firm which built the first cotton mill, 1793. The cotton yarn that they produced was as good as the best English. Cotton thread had not been made anywhere, when the women of a family named Wilkinson conceived the idea, twisted and spun good thread, and thus suggested the manufacture which was established first by Wilkinson Brothers. The centenary of Slater's founding of cotton manufacture was celebrated in 1890. Pop. of P. (1870) 6,619; (1880) 19,030; (1890) 26,630; (1900) 39,231.

PAX, n. *päks* [L. *pax*, peace]; called also PACIFICA'LE and OSCULATORIUM [L. *osculator*, I kiss]: in the *Rom. Cath. Church*, the 'Kiss of Peace': also a sacred utensil—sometimes a crucifix, sometimes a reliquary, sometimes a tablet or plate with a figure sculptured or enamelled upon it—employed in some of the solemn services in the ceremony of giving the 'kiss of peace' during the mass. The practice of saluting each other—the men, men, and the women, women—during public worship, particularly in the *agape*, or love-feast, is frequently alluded to by ancient writers. e.g., Cyril of Jerusalem, *Catech.* xv., and St. Augustine, *Serm.* 227. All the ancient liturgies, without exception, refer to it as among the rites with which the Eucharist



## PAXO—PAXTON.

was celebrated ; but they differ as to its time and place in the Eucharistic service. In the Eastern liturgies it is before, in the Western after, the Offertory (q.v.) ; and in the Roman it immediately precedes the communion. The ceremony commences with the celebrating bishop or priest, who salutes upon the cheek the deacon ; and by him the salute is tendered to the other members, and to the first dignitary of the assistant clergy. Originally the laity also were included, but this was long since abandoned. It is when the mass is celebrated by a high dignitary that the utensil called the pax is used. Having been kissed by the celebrant, and by him handed to the deacon, it is carried by the latter to the rest of the clergy. In ordinary cases, the pax is given by merely bowing, and approaching the cheek to the person to whom it is communicated. The pax is omitted in the mass of Maundy (q.v.) Thursday, to express horror of the treacherous kiss of Judas.

**PAXO**, *pák'sō* : one of the Ionian Islands, 10 m. s.w. of the coast of Albania, 9 m. s.s.e. of the island of Corfu ; about 5 m. long, and about 2 m. broad. The capital, rather the chief village, is Port Gaio (pop. 2,000), on the e. coast. Olives, almonds, and vines are grown, and the island is famous for its oil. Water is sometimes very scarce. Pop. of the island about 3,600.

**PAXTON**, *páks'ton*, JOHN R., D.D. : Presbyterian clergyman : b. Canonsburg, Penn., 1843, Sep. 18. After entering Jefferson Coll. 1859, he enlisted in the Union army, but subsequently (1866) was graduated. His theol. studies were at the Western Theol. Seminary and at Princeton ; he was pastor of the New York Ave. Presb. Chh., Washington, and 1882 was called to the 42d St. Presb. Chh., New York. He was also chaplain of the 7th regt., New York. Ill health caused his resignation of his pastorate, 1893, Nov.

**PAXTON**, Sir JOSEPH : English architect and horticulturist : 1803-65 ; b. Milton-Bryant, near Woburn, Bedfordshire. He was sent to Woburn Free School, but left it at an early age, obtained employment as a working gardener, entered the service of the sixth Duke of Devonshire at Chiswick, and was thence transferred to Chatsworth, where he became the duke's chief gardener. His abilities as a horticulturist found ample scope in the beautiful gardens of Chatsworth, and are attested further by *Paxton's Magazine of Botany*, and other works on plants and flowers. His experience in designing capacious glass conservatories at Chatsworth led him to propose a Crystal Palace of glass and iron for the Great Exhibition (q.v.) of 1851, a fairy palace novel, beautiful, and magnificent. His design obtained for him the honor of knighthood. The Crystal Palace of 1851 was removed from Hyde Park, but became the germ of the nobler Crystal Palace at Sydenham, whose construction he superintended. In 1854, P. was returned to parliament in the liberal interest for Coventry, which he represented about ten years.

## PAXWAX—PAY.

**PAXWAX**, n. *pāks'wāks* [OE. *fax*; AS. *feax*, hair, and AS. *weaxan*, to grow: corresponding to Ger. *haarwachs*]: in *OE.*, the strong tendon in the neck of animals, probably so named from the long hair growing along the back of the neck: also spelled **PACKWAX**, which see.

**PAY**, n. *pā* [OF. *paier*; F. *payer*; It. *pagare*, to pay—from mid. L. *pacāre*, to satisfy, to pay—from L. *pacāre*, to appease]: wages given for duty or service performed; salary; allowance: V. to discharge a debt; to make amends by suffering; to compensate; to reward; to recompense; in *OE.* and *familiarly*, to beat; to chastise. **PAYING**, imp. **PAID**, pp. pt. *pād*, did pay. **PAYER**, n. *pā'ēr*, one who pays. **PAYABLE**, a. *-ā-bl* [F.]. that may be paid; due; that there is power to pay; justly due. **PAYEE**, n. *pā-ē'*, one to whom money is to be paid. **PAYMENT**, n. *pā'mēnt* [F. *payement*]: reward; recompense; something given in discharge of a debt or obligation: in *law* (see below). **PAY-BILL**, in a *public work* or in the *army*, list of names and wages due to each. **PAY-CLERK**, one who makes payments, or pays wages. **PAY-DAY**, day on which wages are paid: on the *London stock exchange*, the last day for closing or settling a stock or share account, generally the 15th and 30th days of the month; in the *New York stock exchange*, settlements are made daily. **PAY-OFFICE**, apartment in which wages are paid; office for payment of the public debt. **PAYMASTER**, one who is to pay; officer in the army whose duty is to pay the troops; naval commissioned officer who has charge of all cash payments of the vessel and of the victualling stores—formerly called *purser*. **PAYMASTER-GENERAL**, in *Britain*, officer of the British ministry, but not of the cabinet, charged with superintending the issue of all moneys voted by parliament. He is virtually the paymaster of the public service, paying merely on the order of the department concerned; is always either a peer or a member of the house of commons, and changes with the ministry.—In the *United States*, duties correspondent to those of the P. G. devolve on the first comptroller of the treasury, assisted by other officials of the treasury department. **PAYMASTER-GENERAL**, in the *U. S. army*, a brig.gen., chief officer of the pay-department in the office of the sec. of war. **PAYMASTER-GENERAL OF THE NAVY**, a commodore, chief official in the bureau of provisions and clothing in the U. S. navy department. **PAYMASTER-SERGEANT**, non-commissioned officer who, as clerk, assists a paymaster. **TO PAY FOR**, to make amends; to give an equivalent for; to bear the expense of. **TO PAY OFF**, to pay and to discharge, as a ship's crew; to retort or revenge upon; to requite; among *seamen*, to fall to leeward. **TO PAY OUT**, to cause to run out, as a rope; to slacken. **HALF-PAY**, half the ordinary pay of officers allowed to them when not performing military duties, in order to retain a right to their services when required or when they have retired from the service.—**SYN.** of 'pay, n.': stipend; payment; remuneration; reward; salary; compensation; recompense; hire.

## PAY—PAYNE.

PAY, v. *pā* [OF. *empoier*, to daub a vessel with pitch—from *poiv*, pitch: Ger. *pech*, pitch: Sp. *pega*, a varnish of pitch; *pegar*, to join together, to cement]: to smear with tar, pitch, etc., as a vessel. PAY'ING, imp. PAID, pp. *pād*, perhaps better PAYED, pp. *pād*, to distinguish it from *pay*, to discharge a debt.

PAYMENT, in Law: discharge of a debt or obligation, especially when money is the means of discharge. P. must be made in money, unless the creditor waives his right, or another mode of P. is provided for in the instrument creating the obligation: see MONEY. P. must be made to the creditor or to a person authorized to receive it on his behalf; if an agent is authorized to receive P. in money, and takes P. in goods, his principal is not bound by his receipt. P. in forged notes or in counterfeit coin is invalid, but the forged notes must be returned in a reasonable time, to throw the loss on the debtor. Usually a bill of exchange or note given to a creditor is not a discharge of the debt till P. of the bill or note. If an agent gives his own note in P. of goods, having received the money from his principal, the P. is good in favor of the principal, unless the note has been received conditionally. If money is sent by letter, the P. is good even if it be lost, if the debtor was expressly authorized or directed by the creditor so to send it. A receipt is only *prima-facie* evidence of P.: it is open to the creditor to show that the particular sum stated in the receipt has not been paid, and also that no P. has been made. P. must be made at the exact time agreed upon: where no time is specified P. must be made on demand. P. of part of a debt bars the operation of the statute of limitations.

PAYN, *pān*, JAMES: novelist: b. Cheltenham, England, 1830. He was educated at Eton and Cambridge. In 1855 he published a vol. of poems, and 1858 became editor of *Chambers's Journal*. His novels are very numerous, and include *Lost Sir Massingberd*, *A Woman's Vengeance*, *Carlyon's Year*, *Not Wooed but Won*, *By Proxy*, *Thicker than Water*. In recent years he has furnished correspondence from London for the *Independent* of New York.

PAYNE, *pān*, JOHN HOWARD: 1792, June 9—1852 Apr. 10; b. New York. When only fourteen years of age he worked in a counting-house and edited a paper, afterward studied for two years in Union College; appeared on the stage 1809, Feb., in the character of *Young Norval* at the Park Theatre, New York, and played with considerable success in other large cities in the United States. He appeared in London 1813, and remained in England nearly twenty years, playing in the principal cities, and writing, and adapting from the French a large number of plays. He was on friendly terms with Coleridge, Lamb, and other literary people, and for some years edited a dramatic paper in London. He returned to New York 1832, was U. S. consul at Tunis 1841-45, and 1851 till his death. His most famous plays were *Brutus* and *Charles the Second*; but his one immortal work was the song *Home, Sweet Home*. His remains were removed to Washington 1883, and a fine monument marks his grave.

## PAYNIM—PAZ.

**PAYNIM** and **PAINIM**, n. *pā'nĭm* [OF. *paienismo*, paganism; *paiënie*, heathendom, heathen lands—from mid. L. *paganismus*, paganism—from L. *paganus*, a heathen]: in *OE.*, *literally*, the country inhabited by pagans; a pagan; a heathen.

**PAYNIZING**, *pān'iz-ĭng* [from *Payne*, the inventor]: process for preserving and hardening wood. It consists in placing well-seasoned timber in an air-tight chamber, and then, when, by means of a powerful air-pump, the wood is deprived of its air, a solution of *sulphuret of calcium* or of sulphuret of barium is admitted, and readily fills the empty vessels all through the wood. The air-pump is again used, and the superfluous moisture drawn out, and a solution of sulphate of iron is injected; this acts chemically on the sulphuret of barium or of calcium, and forms all through the wood either the insoluble sulphate of barium (heavy spar) or of lime (gypsum). The addition of these mineral materials renders the wood very heavy, but it becomes also very durable, and almost incombustible.

**PAYSANDU**, *pī-sān-dō'*, formerly **SAN BENITO**: chief town of a westerly dept. of Uruguay, on the left bank of the Uruguay river, about 200 m. n.w. of Monte Video. It is noted for its export of preserved meat. Pop. 12,000.

**PAYSON**, *pā'son*, **EDWARD**, D.D.: Congregational minister, noted for ability and chiefly for eminent piety: 1783, Jan. 25—1827, Oct. 22; b. Rindge, N. H., son of Seth Payson, D.D. At Harvard, where he graduated 1803, he was said to have read the library through. He studied theol. with his father, and sought to know the Bible rather than systems of doctrine. After teaching three years at Portland, Me., he became pastor there, and continued 20 years till his death. With no unusual merits of elocution, his sermons were alive with thought, imagery, and piety, and he was fearless in rebuking evil. His prayers were remarkable. With somewhat extreme introspection and self-mortification, his faith was strong; and, as death approached, rapturous. Among his published addresses were *The Worth of the Bible*, an *Address to Seamen*, and a *Thanksgiving Sermon*. Three vols. of his sermons were issued, 1828, 31, and 33; and subsequently his complete works.

**PAYTA**, or **PAITA**, *pī'tá*: city, seaport of Peru, on Payta Bay, lat. 5° 5' s. It has railroad connection with the important city of Piura. The harbor is excellent, and the port is a resort for whaling vessels and for many steamers in the foreign trade. The exports consist of hides, cotton, straw hats and matting, and salt. Until recently all the fresh water used was brought on the backs of mules, but a supply is now obtained by an aqueduct. There are 2 churches and a custom-house. Pop. (1889) 3,500.

**PAZ**, **LA**, *lá páz*, Sp. *lá páth* (original name **NUESTRA SENORA DE LA PAZ**), now popularly **LA PAZ**: city in Bolivia: see **LA PAZ**.

## PEA.

PEA, n. *pē* [AS *pisa*; F. *pois*—from L. *pisum*; Gr. *pisos*, a pea; W. *pys*, the pea]: plant, also its seed, of genus *Pisum*, ord. *Leguminosæ* (see below): plu. PEAS, *pēz*, when number is meant, as six *peas*: PEASE, *pēz*, *collectively*, as a dish of *pease*—but it is more generally used as an adj., as *pease-meal*. PEA GRIT, a coarse, pisolitic limestone, so called from its being composed of concretionary bodies, which are round, oval, or flattened like crushed peas. PEANUT, the ground-nut (see below). PEA ORE, an ore of iron, occurring in small globular concretions. PEASCOD, n. *pēz'kōd* [*pea*, and *cod*]: the husk that contains peas. PEA SHELL, the husk of peas. GREEN PEA SOUP, a soup made of green or unripe peas. PEASE MEAL, a flour made from peas. PEASE PUDDING, a pudding made of peas. PEA SOUP, a soup made of peas. SWEET PEA, the *Lathyrus odoratus*, ord. *Leguminosæ*. PEA MAGGOT, caterpillar of a small moth (*Tortrix* or *Grapholitha pisi*), which lays its eggs in young pods of peas. The caterpillar lives in the pods, and eats the peas. *Note*.—The roots show that *pease* is the proper spelling, and that *s* is part of the original word: *pea* in the singular is a modern corruption, on the supposition that the *se* of *pease* belonged to the plural form—the old plural was *piosan* or *peason*.

PEA (*pisum*): genus of plants of nat. order *Leguminosæ*, sub-order *Papilionaceæ*, closely allied to genus *Lathyrus* (q v.), from which it differs chiefly in the triangular style. Two species, supposed to be natives of s. Europe and of the East, are extensively cultivated in Europe for their seeds (peas), which are the best of all kinds of pulse; the COMMON PEA or GARDEN PEA (*P. sativum*) in gardens, and the FIELD PEA (*P. arvense*) in fields; both climbing annuals, with pinnate leaves, ovate leaflets, and branching tendrils in place of a terminal leaflet; the Garden Pea distinguished by having two or several flowers on each flower-stalk, the flowers either red or white, usually white, and the seeds subglobular; the Field Pea having one flower on each flower-stalk, the flowers always red, and the seeds angular from crowding and compression in the pod. But it is probable that they are truly one species, of which the Garden Pea has, through cultivation, departed furthest from the original type; and in the United States only one species is recognized in cultivation. Peas have been cultivated in the East from time immemorial, and three out of the four chief ancient Roman writers on husbandry mention this kind of pulse, whose cultivation was apparently introduced into Europe very early; and its cultivation extends from warm climates, as India, even to the Arctic regions, the plant being of rapid growth and short life. The seeds of the Garden Pea are used for culinary purposes both in a green and in a ripe state; also the green succulent pods of some varieties, known as Sugar Peas or Wyker Peas, in which the membrane lining the inside of the pod—parchment-like in most kinds—is much attenuated. Field peas are used both for feeding cattle and for human food. For the latter purpose, peas are often prepared by being *shelled*, or deprived of the membrane which covers them, in a par-

## PEA.

ticular kind of mill; they are then sold as *Split Peas*, and are much in use for *Pea Soup*. They are also ground into meal, which is used in various ways, chiefly for making a kind of pottage and of unleavened bread. In the countries on the Mediterranean, peas are roasted for eating.

In the United States peas find a place in nearly all home gardens, and great quantities are grown in the vicinity of large towns and cities to be sold in a green state in these markets. They are largely grown also for feeding to stock, both in a green and a dry state; and a considerable quantity is exported to England, though this is offset by importations from Canada. There are a great number of varieties, as many as 150 being grown by one New York seed firm. There are three general classes: the smooth, wrinkled, and those with edible pods. But very few of the latter are grown in the United States. The smooth sorts are a little more hardy, but are inferior in quality to the wrinkled kinds. The varieties range in height from 9 in. to 5 ft., and mature at different periods. Among standard sorts are the American Wonder, Little Gem, Bliss's Everbearing, Stratagem, Telephone, and Champion of England—all excellent for the garden; and the Black-eyed Marrowfat for field culture.

The P. succeeds on almost every kind of soil, but makes a much larger growth on rich land than on light soils, though the latter tend to hasten maturity. Green stablemanures largely increase the growth of vine without a corresponding increase of grain. Well-rotted manure is useful, but commercial fertilizers, especially those containing large proportions of potash and phosphoric acid, often prove more satisfactory. Like other leguminous crops the P. uses large quantities of Nitrogen (q v.), and has the power of obtaining it from the subsoil and probably from the air. For the dwarf sorts the land should be highly fertilized. The land for peas should be well plowed and the fertilizer covered with a harrow. For the home garden the planting should be in double rows, 6 in. apart, and in the case of the tall sorts bushes or wires should be placed between the rows to support the vines. A succession can be obtained by planting varieties which mature at different times or by planting the same sort at intervals of two weeks. If grown for the table none of the seeds should be allowed to ripen, and if grown for seed none should be removed in a green state, the object in the one case being to conserve the strength of the vine, and in the other to secure all the best specimens for seed. Owing to the peculiar structure of the flower varieties are not likely to mix. New sorts are obtained from 'sports' and by cross-fertilization. When grown for market, peas are not bushed. In field culture the P. is sown broadcast at the rate of 2 to 4 bushels of seed per acre, or, what is far better, in drills 3 to 4 ft. apart, according to the size of the variety and the condition of the land, and seeded at the rate of 1½ to 3 bushels per acre. Germination can be hastened by soaking the seed in warm water for a day before sowing. The P. is very hardy, and can be sown as soon as the frost is out of the ground in the

## PEA.

spring. Seed should be covered at least 2 in. deep, in hot weather 3 in., and in field culture the ground should be rolled as soon as the sowing is done. If sown early, peas can be followed the same season by rye or wheat. Weeds should be kept down by frequent use of the cultivator. When the peas are fully ripe they may be cut with a scythe, dried in the sun, and then drawn to the barn and threshed. If well cured the halm or vines will be good fodder for sheep or cows. Instead of cutting the vines are sometimes gathered with a horse-rake. For a soiling crop (see SOILING OF CATTLE) the P. is of great value; also it can be used in many places for the double purpose of affording summer pasture for sheep and renovating the land. For Ensilage (q.v.) also it is valuable. It can be cut from the time the plants are in blossom till the berries are nearly grown. Peas are sometimes sown with oats for green fodder, 2 bushels of peas and 1½ bushels of oats per acre. The plant is very useful as green manure. It thrives on land too poor for clover, yields a large quantity of valuable material, and supplies 2 crops in one season.

The feeding value of peas is due to the large proportion of albuminoids which they contain. The composition of the pea plant varies somewhat with the variety, and with the character of the soil and climate, but the following tables probably represent a fair average.

### PERCENTAGE OF DIGESTIBLE NUTRITIVE MATTER.

	Grain.	Hay, cut in blossom.
Water.....	14·3	16·7
Albuminoids....	20·2	8·7
Carbohydrates ..	54·4	35·6
Fat.....	1·7	1·8

The inorganic elements (abstracted from the soil) in 100 lbs. of dry material are represented in lbs. and fractions of lbs. as follows :

	Grain.	Stalks.		Grain.	Stalks.
Potash.....	0·98	1·07	Sulphuric Acid.	0·08	0·28
Soda... ..	0·09	0·20	Silica .. .. .	0·02	0·28
Magnesia.....	0·19	0·38	Chlorine.....	0·06	0·30
Lime.....	0·12	1·86	Sulphur.....	0·24	0·07
Phosphoric Acid.	0·88	0·38			

Peas should be ground before feeding, and if mixed with other grain will give better results than when fed alone. For cows a mixture of 3 parts corn, 2 parts oats, and 2 parts peas ground together makes a rich food and greatly increases the quantity of milk and butter produced. If fed to horses peas should be mixed with equal quantity of corn and ¼ the quantity of flax-seed. For hogs peas may be mixed with milk, or water, and corn meal. The chief disease of the pea is the mildew. This occurs principally in warm, wet weather, and is most likely to affect late-sown crops. If carefully kept, the seed retains its vitality two or three years, but unless infested with the Pea Weevil (q.v.) fresh seed is to be preferred for sowing. The Cow-pea (*Dolichos*) has seeds somewhat resembling beans, but is grown in the same manner as other peas. It is grown largely

## PEA BEETLE—PEABODY.

at the South, and is a valuable forage crop and soil-improver. The Sweet-pea (*Lathyrus odoratus*), largely grown as an ornamental and flowering plant, also belongs to a different species. It requires early sowing, and if many flowers are desired should not be allowed to produce seed. The so-called everlasting pea is a member of the *Lathyrus* family. It is admired for its fine leaves and flowers.

PEA BEETLE, or PEA CHAFER, *pē chā'fēr* (*Bruchus pisi*): coleopterous insect, very destructive to crops of peas in s. Europe and in N. America. It is about a quarter of an inch long, black, variegated with bright brown hairs, and with white spots and dots on the wing-cases. It lays its eggs in the young pods, one for each pea, and the larva eats its way into the pea, and completely hollows it out.

PEABODY, *pē'bod-ĭ*: town (formerly South Danvers) in Essex co., Mass.; at the junction of the eastern and southern divisions of the Boston and Maine railroad, 2 m. w. of Salem, 16 m. n.n.e. of Boston. It was named for George Peabody, the London banker and philanthropist, who was born here and who founded here 1852 the Peabody Institute, on which he expended about \$200,000. There are numerous churches and schools; 1 weekly and 1 semi-weekly newspaper; 1 national bank (cap. \$250,000), and a savings-bank. Among prominent industries are the tanning and curing of leather and manufacture of carriages and glue. Pop. (1880) 9,028; (1890) 10,158; (1900) 11,523.

PEA'BODY, ANDREW PRESTON, D.D., LL.D.: minister, educator: 1811, Mar. 19—1893, Mar. 10; b. Beverly, Mass. He graduated at Harvard 1826. After a course in the Harvard divinity school and one year in math. tutorship, he became pastor of the South Parish (Unitarian), Portsmouth, N. H., 1833. In 1860, he was elected preacher and Plummer prof. of Christian morals, Harvard, and retired as emeritus prof. 1881. He was acting pres. 1862 and 1868-9. For 11 years from 1852, he edited the *N. Amer. Review*, to which and other periodicals he contributed. He always stood high for intellectual ability and Christian nobleness of spirit and as representative of evangelical Unitarianism. His more important works are: *Lectures on Christian Doctrine* (1844); *Sermons of Consolation* (1847); *Conversation, its Faults and Graces* (1856); *Christianity the Religion of Nature* (1864); *Sermons for Children* (1866); *Reminiscences of European Travel* (1868); *Manual of Moral Philosophy* (1874); *Christianity and Science* (1874); *Christian Belief and Life* (1875); *Harvard Reminiscences* (1888); *Harvard Graduates Whom I have Known* (1890). He also edited the life and writings of James Kennard, Jr., the Rev. Jason Whitman, John and William Plummer, and William Plummer, Jr.

PEA'BODY, ELIZABETH PALMER: 1804, May 16—1894, Jan. 3; educator, philanthropist: b. Billerica, Mass.; sister of Mrs. Nathaniel Hawthorne and Mrs. Horace Mann. She studied Greek with Emerson and taught in Bronson Alcott's school. Her chief distinction was that she first introduced into this country the kindergarten system, and



## PEABODY.

published *The Kindergarten in Italy* (U. S. Bureau of Education 1872) and *Letters to Kindergartners* (1886). Other works by her are *Æsthetic Papers* (1849); *The Polish-Amer. System of Chronology* (1852); *Reminiscences of Dr. Channing* (1880); *Last Evening with Allston, and Other Papers* (1887). She edited *Crimes of the House of Austria* (1852) and Mrs. Mann's *Guide to the Kindergarten* (1877).

PEA'BODY, GEORGE: merchant, banker, and philanthropist: 1795, Feb. 18—1869, Nov. 14; b. Danvers, Mass. His parents were poor, and his only education was at the district school. At the age of 11 he was placed with a grocer, and at 15 in a haberdasher's shop in Newburyport. When 22 years old, he was a partner in Baltimore with Elisha Riggs, who supplied the capital, while P. was the practical manager. As a travelling salesman in N. Y., Penn., Md., and Va., he built up a stupendous business—at the withdrawal of Riggs, about 1830, surpassed by few mercantile concerns in the world. In 1827 he first visited England, where he settled permanently ten years later. Withdrawing from the Baltimore firm 1843, he established himself in London as a merchant and money-broker, and accumulated great wealth. As one of three commissioners appointed 1848 by the state of Md. to obtain the restoration of its credit, he refused all payment, and received a special vote of thanks from the legislature. In 1851 he supplied the sum required to fit up the U. S. dept. at the Great Exhibition. In the following year he sent a large donation, afterward increased to \$270,000, to found an Educational Institute, etc., in his native town, Danvers, Mass., now called Peabody. He contributed \$10,000 to the first Grinnell Arctic Expedition; \$1,400,000 to the city of Baltimore for an Institute of Science, Literature, and the Fine Arts; \$8,000,000 for promotion of education, endowment of libraries, etc., in the United States. 1862-68 he gave £350,000 (more than \$1,700,000) for improving the condition of the London poor; and in his will he left £150,000 (about \$730,000) for the same purpose; in all half a million pounds sterling, which has been applied with careful calculation to construction of improved dwellings, to be rented at low rates to those classes of working-people who have found it difficult to supply their families with suitable homes. Mr. P. died at Eaton Square, London.—See PEABODY EDUCATIONAL FUND.

PEA'BODY, NATHANIEL: revolutionary soldier: 1741, Mar. 1—1823, June 27; b. Topsfield, Mass.; son of Dr. Jacob P. He entered on the practice of medicine at Plaistow, N. H.; was made lieut.col. 1774, but resigned the king's commission; aided in capturing Fort William and Mary; became adjt.gen. of militia 1777. At the beginning of the war he was active in the N. H. legislature and conventions; chairman of the committee of safety 1776; in congress 1779-80; delegate to the New Haven commercial convention 1779; prominent in forming the state constitution 1782-3; mem. of legislature 8 yrs., and speaker 1793; maj.gen. of militia 1793-98. The last years of his life were

## PEABODY—PEABODY EDUCATIONAL FUND.

passed within the debtor's limits. He died at Exeter, N. H.

PEABODY, SELIM HOBART, PH.D., LL.D.: educator and author: b. Vt. 1829. He was prof. of math. and civil engin. in the Polytechnic Coll. of Pennsylvania 1854; principal of the high school at Fond du Lac, Wis., 1859; supt. of schools at Racine, Wis., 1862; teacher in high school, Chicago; prof. of physics and civil engin. in the Agricultural Coll. at Amherst, Mass., 1871; and of mech. engin. and phys. in the Univ. of Ill. 1878; literary ed. of the Amer. Book Exchange 1880, and an associate editor of the *Library of Universal Knowledge*, and then for some years prest. of the Univ. of Ill. Prof. P. was president of the Chicago Acad. of Sciences in 1892-95. He has published *Elements of Astron.*, *New Practical Arith.*, and *Cecil's Books of Nat. His.* (3 vols.), treating of beasts, birds and insects, and well adapted to beginners. Head of Expos. Ed. Depts., etc. D. 1903 in charge at St. Louis.

PEABODY EDUCATIONAL FUND: organized trust. for promoting education in the more destitute parts of the south after the civil war of 1860-65; created by gifts of George Peabody (q.v.). The purpose of Mr. Peabody was privately communicated to Robert C. Winthrop, 1866, Oct.; and 1867, Feb., the communication to the 16 trustees selected by Mr. Peabody was made, and the trust organized at meetings in Washington, Feb., and in New York, March. In this he gave \$1,000,000 'for the promotion and encouragement of intellectual, moral, or industrial education among the young of the more destitute portions of the southern and southwestern states of the Union.' In addition he gave Miss. state bonds of the nominal value of \$1,100,000, the state not having at that time repudiated them. In 1869, July 29, he met the trustees at Newport, R. I., and made a second gift of 'securities of the very highest character,' to the amount of \$1,000,000, and 6 per cent Florida bonds amounting to \$384,000. The use of the fund he left to the 'absolute discretion' of the 16 trustees. At the meeting in New York, 1867, Mar. 30, Barnas Sears, D.D., LL.D., was chosen general agent; and the trust. Mr. Winthrop became pres. of the trust; he held the office for 25 years. By the P. E. F. it was undertaken especially to induce all the states needing aid to establish and maintain free schools, and with this view its aid was given to select separate schools at central points, from which its influence would widely radiate. To help those who helped themselves was the inflexible rule, every dollar from the fund being given at central points. There has resulted a general organization of free schools and of normal schools in 12 southern states. To 1889, Oct., the fund had furnished \$1,800,000 in aid of schools, and the states themselves had raised \$122,000,000. For 1889-90 the fund stood at \$2,075,175 in good securities, and \$607,000 in 'inactive' Miss. and Fla. bonds. Jabez L. M. Curry, D.D., LL.D., of Va.; (d. 1903, Feb. 12); was the general agent of the trust from its creation.

## PEACE.

PEACE, n, *pēs* [F. *paix*; OF. *pais*; AS. *paīs*; Sp. *paz*; It. *pace*, peace—from L. *pax* or *pācem*, peace]: freedom from disturbance or agitation; freedom or respite from war; calm; quiet; rest; concord; harmony; heavenly rest: INT. silence; hist. PEACE'LESS, a. *-lēś*, void of peace. PEACE'ABLE, a. *-ā-bl*, quiet; disposed to peace; not quarrelsome. PEACE'ABLY, ad. *-ā-blī*. PEACE'ABLENESS, n *-bl-nēs*, state of being peaceable; quietness. PEACE'FUL, a. *-fūl*, quiet; tranquil; mild; removed from noise or tumult. PEACE'FULLY, ad. *-lī*. PEACE'FULNESS, n. *-nēs*, the quality or condition of being peaceful; freedom from disturbance or discord. PEACEBREAKER, one who disturbs the public peace. PEACEMAKER, one who promotes peace by reconciling persons at variance. PEACE OFFERING, among the *anc. Jews*, a voluntary offering to God in thankfulness for His mercies, or as an act of devotion; satisfaction offered for offense given, generally to one in a higher social position. PEACE OFFICER, a civil officer; a constable. PEACE PARTY, a party in favor of maintaining peace with foreign powers as by alleged undue concessions. AT PEACE, in a state of peace; not engaged in war or enmity. TO BE SWORN OF THE PEACE, to be charged on oath for the preservation of the public peace, as a public officer. TO HOLD ONE'S PEACE, to be silent. TO MAKE ONE'S PEACE, to reconcile one's self with or become reconciled with. TO MAKE PEACE, to put an end to war or enmity. JUSTICE OF THE PEACE, see under JUSTICE. COMMISSION OF THE PEACE, a special commission under the great seal appointing justices of the peace.—SYN. of 'peaceable': tranquil; serene; mild; still; pacific; peaceful; undisturbed.

PEACE, ARTICLES OF THE, in Law: complaint made to a court against a person who threatens another with bodily injury; and the redress given is to bind the threatening party over with sureties to keep the peace. Justices of the peace have, by their commission, authority to cause persons to find sufficient security to keep the peace. Hence any one who is threatened either in person or property, or in the person of his wife or child, may go before a justice of the peace and complain on his oath of the fact. The justice is to consider if the language used amounted to a threat, and if he is satisfied that it does, he issues his warrant to bring the party before him, who is then heard in explanation, and if it is not satisfactory, he is ordered to find sureties that he will keep the peace. If he cannot do so, he is committed to prison for a limited time. The truth of the allegations in the A. of the P. cannot be controverted by affidavit or otherwise; but exception may be taken to them as insufficient, or proofs may be offered for reduction of amount of bail.

PEACE, OFFENSES AGAINST THE PUBLIC: offenses which consist in either actually breaking the peace, or constructively doing so by leading directly to a breach. These offenses are now usually known under the heads of unlawful assemblies, seditious libels and slanders, riots,

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affrays, challenges to fight, forcible entry and detainer, and libel and slander. Those who take part in an unlawful assembly commit a misdemeanor against the public safety. All persons assembled to sow sedition, and bring into contempt the constitution, are in an unlawful assembly. It is somewhat difficult to define precisely what amounts to an illegal assembly, except by saying that it points to some course inconsistent with the orderly administration of the laws. It is the duty of all individual citizens to resist and oppose any unlawful assembly; but the duty rests primarily with the magistrates of the district, who are indictable for breach of duty in not taking active and immediate steps to put down riots. The magistrates ought to call at once upon special constables to be sworn in, and if these are insufficient, to call for the aid of the military. Seditious libels also are offenses against the peace, as inciting directly to a breach: such are libels vilifying the legislative or the executive government, or the courts of justice; and in Great Britain libels against even a foreign sovereign, because the tendency of such a libel is to breed misunderstanding between national governments. A riot is the most active form of an offense against the public peace. To constitute a riot, there must be at least three persons engaged together in pursuance of an illegal purpose. Riots often originate in an attempt to redress summarily some private wrong. On such an occasion, before extreme measures are resorted to, and as a test of the good faith of those who are spectators, instead of parties, and by way of full notice to all concerned, the magistrate or officer of the peace commands all persons to disperse, otherwise they will be guilty of felony. Persons not retiring may be arrested, and carried before a justice, and committed to prison. It is, however, possible that the justices may make a mistake in thinking that to be an illegal assembly which is not so; accordingly if the party arrested prove at the trial that it was no illegal assembly, he will be discharged. An affray also is an offense against the public peace, being a public assault, i.e. an assault committed in presence of third parties, for this is apt to lead to further breaches of the peace by others joining in it. Thus prize fights and duels are affrays, and all present at them are principal offenders. So challenges to fight, provocations to fight, and forcibly entering into a house, are misdemeanors against the public peace.

PEACE RIVER: large stream of Canada, rising in British Columbia, about lat. 55° n., flowing n. and n.e. about 1,000 m. through the territory of Athabasca to Lake Athabasca, whence its waters are carried by the Slave river and the Mackenzie to the Arctic Ocean. Much of its course is navigable. Its valley is very rich and fertile.

PEACH, n. *pēch* [F. *pêche*; OF. *pesche*—from It. *pesca* or *persica*, a peach—from L. *persicum*, the Persian fruit, a peach—from *Persicus*, of or from Persia]: a very fine fruit—also the tree—the *Amygdalus Persica* or *Persica vulgaris*, ord. *Rosaceæ* (see below): in *mining*, name given

## PEACH.

by Cornish miners to certain rocks of a bluish-green color—a lode composed of it is called *peachy lode*. PEACHY, a. *pēch'i*, resembling the peach. PEACH-COLORED, a. in color like a peach-blossom; of a delicate pale red.

PEACH, v. *pēch* [a slang corruption of *impeach*]: to inform against; to betray one's accomplice. PEACH'ING, imp. PEACHED, pp. *pēcht*.

PEACH (*Amygdalus Persica*): fruit-tree much cultivated in temperate climates; native of Persia and n. India. It is of the same genus with the Almond (q.v.)—from which Darwin believed it to have been derived—having oblongo-lanceolate serrulate leaves; solitary pink flowers, appearing before the leaves; and the sarcocarp of the drupe succulent.—The NECTARINE differs from the P. only in having a smooth fruit, while that of the P. is downy or velvety; and it is a mere variety, probably produced and certainly preserved by cultivation. Its fruit is scarcely equal to that of the P., and its smooth skin, which gives it a handsome appearance, exposes it to the attacks of the curculio. In general the methods of pruning and cultivation are alike for both fruits. Both peaches and nectarines are divided into *freestones* and *clingstones*. In the Freestone P. the flesh of the fruit parts from the stone; in the Clingstone it adheres to it. The Freestone P. is the *Pêche* of the French, the Clingstone P. their *Pavie*. Of all these there are many sub-varieties, the finer ones being perpetuated by budding. There is a remarkable variety of Chinese origin, with the fruit compressed and flattened, and with almost evergreen leaves.

The P. is propagated from the seed and by budding (see NURSERY). By the latter method varieties are perpetuated, but by the former they are not usually reproduced. Grafting, successful often in warm climates, is likely to fail in cold regions. Stocks may be budded the first year of their growth from seed, and transplanted the next year but one. The P. thrives in most mild climates, and to some extent is grown as far n. as New England, but is liable to be destroyed by severe cold. In England it is grown in houses or trained on walls. The trees are rather small, rarely reaching a height more than 25 ft., and the majority not growing near as tall. In the n. United States the P. is a rather short-lived tree, but under favorable conditions it lives 50 to 100 years. The season of its profitable bearing in orchard cultivation at the North ranges from 5 to 10 years. The P. thrives best in warm and rather light soils, but can be grown on clays and other lands. If wet, the soil must be thoroughly drained. The trees should be in straight rows, and be placed 12 to 20 ft. apart each way for standards, and 8 to 10 ft. for dwarfs. Stable manure promotes the growth of the trees but injures the quality of the fruit. Either wood ashes or complete commercial fertilizers give excellent results. The ground is to be kept free from grass and weeds, and the surface made mellow by frequent cultivation. Beans or potatoes may be grown between the trees for two or three years after the orchard

## PEACH.

is planted, but fertilizers must be liberally applied, and after the third year the trees should have all the ground. The trees should be pruned every spring. The heads need to be kept low, and the branches of the previous year's growth shortened one-third to one-half. Any shoots showing signs of weakness or disease should be wholly removed. The fruit is always produced on wood formed the year before; consequently, a reasonable number of annual shoots should be left on all parts of the tree, but they must not be allowed to reach too great a length. For home use the fruit is allowed to ripen on the tree, as it there reaches its highest degree of perfection; but for market, especially if to be shipped long distances, it must be picked before it is fully ripe. The quality of the fruit is greatly modified by climate—a fact which should always be kept in mind when planting. Some varieties which are very fine at the north are worthless at the south, and the southern varieties lose their fine qualities when taken to the colder portions of the country. The best American sorts also fail in England, even under careful culture in protected situations. The greater portion of the peaches grown in the United States are produced in N. J., Del., Md., Penn., Va., and Cal., where some of the P. orchards contain thousands of trees. In Cal. the fruit reaches great size. Large quantities are grown also in some of the s. and w. states, and there are orchards of some extent in N. Y., Conn., and Mass.; but in the latter states the trees are rather short-lived. In rich soil the tree makes rapid growth, and on some of the western plains it is sometimes used for fuel. The fruit is not only used in its fresh state, but vast quantities also are canned, and many thousands of bushels are evaporated and sold as dry peaches. In the extensive P. growing regions considerable quantities of P. brandy are made from the ripened fruit. There is a poisonous acid in the leaves and bark of the tree, and in the kernel of the fruit. In small gardens the P. is sometimes grown as a dwarf. The dwarfs, formed by working the P. on the plum, also are planted with considerable success on cold and on clay soils. The chief enemy of the P. is the peach-worm, or borer (*Algeria exitiosa*), which works into the bark below the surface of the land. Every tree should be examined in spring and summer, and the borers cut out. Piling a mixture of lime and ashes around the trunks of the trees has a tendency to keep these pests away. Closely covering the trunk, from the ground to a height of 6 or 8 inches, with pasteboard or oiled paper will also prevent attacks of these insects. The most formidable disease of the P. is the Yellows. It is extremely virulent and contagious. A knife used in pruning an affected tree is said to communicate the disease to a healthy one, and seeds from the fruit of a diseased tree are likely to produce stocks which fall an easy prey to the malady. The disease often spreads without direct contact with an affected specimen. Various theories have been held regarding the cause of the disease, and numerous remedies proposed; but the most thorough and careful investigators

## PEACH-WOOD—PEACOCK.

are undecided as to the cause, and no effectual treatment has been found. On the first appearance of the disease, indicated by premature ripening of the fruit, a yellow color of the leaves, and a feeble growth and appearance, the tree should be cut and burned; and no other P. tree should occupy the land for several years. In N. Y. and a few other states there is a law that all peach trees affected by the yellows shall be destroyed, and officers are appointed to enforce its provisions. The U. S. govt. has obtained a quantity of seed from Turkistan in hope of securing a hardy stock that will not be affected by the yellows. The *leaf-curl* sometimes proves quite injurious to the tree. It was formerly charged to attacks of insects, but is now believed to be caused by sudden changes of weather. The affected leaves should be picked when the weather becomes settled. The preventives are sheltered locations and such cultivation as will promote vigorous growth.

PEACH'-WOOD, or LIMA-WOOD, *lě'má-wúd*: a dye-wood imported from S. America, said to be derived from a species of *Cæsalpinia*, allied to that which yields the Nicaragua wood. It yields a fine peach color, whence its name; and is used in muslin and calico printing and dyeing.

PEACOCK, n. *pě'kók* [F. *paon*; L. *pāvo*; Dut. *pauuro*, a peacock—from the cry of the bird; Gr. *taōs*, a peacock; comp. Pers. *tāvus*; Tamil, *tókei*, a peacock]: large domestic bird, remarkable for the beauty of its plumage (see below): fem. PEACHEN: ADJ. applied to ore and minerals which exhibit an iridescent lustre like the changing hues of the peacock's tail; pavonine. PEACHICK, n. *-chik*, the chicken or young of the peacock. PEACOCK FISH, a fish of the Indian seas, having beautiful streaks of color.

PEACOCK, or PEAFOWL (*Pavo*): genus of gallinaceous birds of family *Pavonidæ*, or *Phasianidæ*, of which only two species are known, natives of the E. Indies; birds of large size, and remarkable for magnificence of plumage. The bill is of moderate size, somewhat arched toward the tip; the cheeks nearly naked; the head crested, the tarsi rather long, and armed with a single spur; the wings short; the upper tail-coverts prolonged far beyond the tail, and forming a splendid train—popularly called the *tail*—which is capable of being erected and spread out into a great disk, the true tail being at the same time erected to support it. The Common P. (*P. cristatus*) has for crest a kind of aigrette of 24 upright feathers, with slender almost naked shafts and broad tip. The tail consists of 18 brown stiff feathers, and is about six inches long. The train derives much of its beauty from the loose barbs of its feathers while their great number and unequal length contribute to its gorgeousness, the upper feathers being successively shorter, so that when it is erected into a disk, the eye-like or moon-like spot at the tip of each feather is displayed. The lowest and longest feathers of the train do not terminate in such spots, but in spreading barbs, which encircle the erected disk. The blue of the neck;

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the green and black of the back and wings; the brown, green, violet, and gold of the tail; the arrangement of the colors, their metallic splendor, and the play of color in changing lights, render the male P. an object of universal admiration—a sentiment in which the bird himself evidently participates to a degree that is very amusing, as he struts about to display himself to advantage, and labors to attract attention, affording a familiar proverbial image of ostentation and pride. When the disk is erected, the P. has the power of rattling the shafts of its feathers against each other in a very peculiar manner, by a strong muscular vibration. The Peahen is much smaller



Peacock.

than the male bird, has no train, and is of dull plumage, mostly brownish, except that the neck is green. As in some other gallinaceous birds, the female has been known, in old age, to assume the plumage of the male. Individuals with white plumage are frequent, in which even the eye-like spots of the tail are but faintly indicated; and pied peacocks, having the deep blue of the neck and breast contrasted with pure white, are sometimes seen. The P. is generally supposed to have been known to the Hebrews in the time of Solomon, but it is not certain that the word commonly translated *peacocks* in the account of Solomon's importations from Tarshish (II. Chron. ix. 21) does not signify *parrots*. It is usually stated that it became known to the Greeks first on the occasion of Alexander's expedition to India, but Aristophanes mentions it in plays written before Alexander was born. The P. became common among the Greeks and Romans; a sumptuous banquet in the latter days of Roman greatness was scarcely complete without its flesh; and wealth and folly went to the excess of providing dishes of peacocks' tongues and peacocks' brains. Throughout the middle ages, also, a P. was often presented at the tables of the great, on great occasions, the skin with the plumage being placed around the bird after it was cooked. The P. is now common in most parts of the world; generally kept, however, except in warm countries, for ornament rather than for profit, though both



## PEACOCK-STONE—PEA CRAB.

the flesh and the eggs are very good food. It readily partakes of all the ordinary food provided for the poultry-yard, and is fond of buds and succulent vegetables. It is hardy enough even in cold climates, except that few eggs are laid, and the young are difficult to rear, but the adult birds sit on trees or on the tops of houses, stacks, etc., during the keenest frosty nights, never, if they can avoid it, submitting to the confinement of a roosting-place, like that of the common fowl. Peacocks are found in almost all parts of India, Siam, etc.; and the multitudes in some districts are wonderful. 'About the passes in the Jungletery district,' Col. Williamson says, in *Oriental Field Sports*, 'whole woods were covered with their beautiful plumage, to which a rising sun imparted additional brilliancy. The small patches of plain, among the long grass, most of them cultivated, and with mustard then in bloom, which induced the birds to feed, increased the beauty of the scene; and I speak within bounds when I assert that there could not be less than 1,200 or 1,500 peafowls, of various sizes, within sight of the spot where I stood for near an hour.' Sir James Emerson Tennent, also, in his work on Ceylon, says that 'in some of the unfrequented portions of the eastern province, to which Europeans rarely resort, and where the peafowl are unmolested by the natives, their number is so extraordinary that, regarded as game, it ceases to be "sport" to destroy them; and their cries at early morning are so tumultuous and incessant as to banish sleep, and amount to an actual inconvenience.'—The harsh cry of the P. seems to have been imitated in its Greek name *Taōs*, and probably has given rise also to the Latin *Pavo* and the English *pea-cock*. The P., in a wild state, always roosts on trees, but makes its nest on the ground. When alarmed, as it feeds on the ground, it cannot readily take wing, and is sometimes run down by dogs or by horsemen.—The other species of P. is the JAPAN P. or JAVANESE P. (*P. Japonensis*, *Javanicus*, or *muticus*), native of some s.e. parts of Asia and neighboring islands; nearly equal in size to the Common P., but of less brilliant though very similar plumage. The cheeks and around the eyes are yellow; the neck, and other fore parts, greenish with golden reflections. The crest is longer than that of the Common P., its feathers less equal, and webbed along their length.

**PEA'COCK-STONE:** name under which the dry cartilaginous ligaments of some large lamellibranchiate mollusks, e.g., the pearl oyster, are sold by jewellers. They are used for ornamental purposes, though not so much as formerly; and mostly on the continent of Europe, particularly Portugal. They have opaline reflections, and are therefore sometimes called *Black Opal*.

**PEA CRAB** (*Pinnotheres*): genus of brachyurous crustaceans, with nearly circular and not very hard carapace. They are of the size of a small pea, and interesting from their living within the mantle-lobes of lamellibranchiate mollusks, a fact well known to the ancients, and giving rise to curious fables. A species (*P. veterum*) is

## PEA-JACKET—PEALE.

very common in the *pinnae* of the Mediterranean, and was imagined to render important services to its host in return for its lodging, keeping a lookout for approaching dangers, against which the blind pinna itself could not guard, and particularly apprising it, that it might close its shell when the cuttle-fish came near. It is remarkable that this is repeated by Hasselquist in the middle of the 18th c. as a piece of genuine natural history. Whether the P. C. lives at the expense of the mollusk and sucks its juices, is uncertain: it is certain that the flesh of such mollusks is palatable to pea crabs, and they eat it greedily in the aquarium. Species are found in almost all parts of the world.

PEA-JACKET, n. *pē'-jāk-ēt* [Dut. *pije*, a coarse thick cloth: Goth. *paida*, a coat: Fin. *paita*, a shirt: comp. Gael. *peitean*, a woolen shirt: W. *pais*, a coat]: a coarse woolen jacket worn by seamen; a pilot's rough heavy coat.

PEAK, n. *pēk* [Ir. *peac*, a sharp-pointed thing: Gael. *beic*, a point: Sp. *pico*; F. *pic*, a sharp point: AS. *peac*; It. *picco*, a peak]: the top ridge or jutting part of a hill or mountain; the rising front part of a thing, terminating somewhat like a point; the upper outer corner of an extended sail; a point: V. to raise more obliquely. PEAK'ING, imp. PEAKED, pp. *pēkt*: ADJ. pointed; ending in a point. PEAKY, a. *pēk ī*, having peaks, or situated on them. PEAK'ISH, a. *-īsh*, having peaks; hilly; exposed.

PEAK, v. *pēk* [Gael. *piochan*, one who wheezes as from sickness: It. *piolare*, to whine or pule: Sw. *pijaka*, to whine or pule]: in *OE.*, to waste away in sickness; to become emaciated; pule; whine. PEAK'ING, imp.: ADJ. puling; sickly; showing signs of decay. PEAKED, pp. *pēkt*. PEAK'ISH, a. having pale, sharp features.

PEAL, n. *pēl* [perhaps a shortened form of Eng. *appeal*: F. *appel*, a call with a drum or trumpet; *appeau*, a bird-call; *appeaux*, the chimes or chiming of bells: comp. Norw. *bylia*, to resound, to bellow: Icel. *bylr*, a tempest; *bralla*, a bell]. a succession of loud sounds, as of thunder; a set of bells tuned to produce musical combinations or chimes when rung; chimes rung upon a set of bells. V. to resound; to utter or give forth loud or solemn sounds. PEAL'ING, imp.: ADJ. uttering loud successive sounds; sounding as a peal. PEALD, pp. *pēld*.

PEALE, *pēl*, CHARLES WILSON: artist, mechanic, and museum collector: 1741, Apr. 16—1827, Feb. 22; b. Chesterton, Penn. After working at saddlery, he studied portrait-painting in Boston under Copley, and at London under Benjamin West; painted in Annapolis, Md., 1774, and Philadelphia 1776; was capt. of volunteers in the war of 1812, having part in the battles of Trenton and Germantown; member of the legislature 1779; collected materials for the museum named after him and opened 1802; lectured on nat. hist.; and was active in founding the art acad. of Philadelphia. At one time and another he practiced modelling, engraving, dentistry, taxidermy, and the making of coaches, clocks, and watches. He painted many eminent men, and 14 portraits of Washington between 1772-83;

## PEALE—PEA'NUT.

also *Christ Healing the Sick*; and published a treatise, *Building Wooden Bridges* (1797); a discourse on nat. hist. (1800); *The Means of Preserving Health* (1803); and *Domestic Happiness* (1816). He died at Philadelphia.

PEALE, REMBRANDT: artist: son of Charles W. P.: 1778, Feb. 22—1860, Oct. 3; b. Bucks co., Penn. At 18 years of age, after painting a portrait of Gen. Washington, he was in southern cities, excepting two years abroad; 1807-09, in Paris, painting eminent Frenchmen for his father's museum; 1810 in northern cities in the United States; again abroad for some years. He was pres. of the Amer. Acad., and one of the founders of the National Acad. of Design. From Houdon's bust and his own knowledge, he painted 1823 a portrait of Washington esteemed the best by Chief-Justice Marshall. He died in Philadelphia. Of his other works, the best known are *The Roman Daughter* and *The Court of Death* (1820); also, *Napoleon on Horseback* (1810); *Jupiter and Io*; *Lysippa on the Rock*; and *The Ascent of Elijah*. He published an account of the *Skeleton of the Mammoth* (1802); *Notes on Italy* (1831); *Graphics* (1841); *Reminiscences of Art and Artists* (1845).



Pean.

PEAN, n. *pě'an*: see PÆAN. PE'ANISM, n. *-izm*, the song or shouts of triumph; ascription of tuneful praise to a victor.

PEAN. *pēn* [Old Fr. *pannes*]: in heraldry, one of the furs, differing from Ermine only in the tinctures: the ground being sable, and the spots of gold.

PEA'NUT (*Arachis hypogaea*): annual leguminous plant, probably native of S. America; known also as *goober*, *ground-nut*, *pindar*, and by various other names (see ARACHIS). It is extensively cultivated for its seeds, which are used for food and for the manufacture of oil. The plants grow from 10 to 20 in. in height, and after the petals fall the flower-stalks penetrate the earth and the fruit is formed under ground. For its full development the P. needs a warm climate. It is largely grown in portions of Africa, India, S. America, the W. Indies, and the United States. In the latter country the production as a market crop is nearly confined to the states of Va., N. C., and Tenn. It can be grown on a variety of soils, but as dark or red soils stain the pods and lower the market price, sandy lands or light clays are preferred. The land should be well plowed and harrowed, and fertilized by application of lime or superphosphate. The heaviest seed is to be used for planting; and, as breaking the pink membrane in which it is enveloped will prevent its germination, it must be shelled carefully. Ordinary planting machines cannot be used, but one for the special purpose has been invented. Rows are to be 2½ or 3 ft. apart, and hills about the same distance. Two bushels of seed in pods, or 5 pecks shelled, will stock an acre. Planting is done in May or early in June. Weeds

## PEA ORE—PEAR.

must be kept out by cultivation. Harvesting is done in October. The plants are loosened by a plow, then taken out with a fork or by hand. After lying in the sun a day or two, they are put in small stacks with the roots out, where they should dry for a few weeks. The nuts are then picked from the vines by hand. The imperfect ones are thrown out, and the good ones are cleaned by shaking in a crate with spaces to allow the dirt to fall through. Some wholesale dealers have machines for this purpose. The nuts weigh about 22 lbs. per bushel, and are put in bags holding 100 lbs. The average yield per acre is not much above 25 bushels, though more than 100 bushels have been obtained. After the harvesting is done, swine are turned into the fields to gather and fatten on the nuts left in the ground. The vines are useful for fodder. The seeds yield about 20 per cent. of a fixed oil of yellow color and bland flavor, with a specific gravity of .918. It is an excellent lubricant, burns well in warm weather, is used in dressing woolen cloth and in manufacture of soap, and is said to be largely sold as olive oil. In 1890 the peanut product of the U. S. was 3,588,143 bushels, the greatest supply being from Va., where 58,951 acres produced 1,171,624 bushels. New York consumes 500,000 bushels of the nuts each year.

**PEA ORE:** form of compact brown iron ore (hydrated peroxide of iron), consisting of round smooth grains from the size of mustard-seed to that of small peas. Sometimes the grains are still smaller and flattish. This iron ore is abundant in some places in France, and is smelted.

**PEAR**, n. *pär* [AS. *pera*; F. *poire*; It. *pera*; L. *pirum*, a pear]; a fruit—also the tree—*Pyrus communis*, sub-ord. *Pomēæ*, ord. *Rosācēæ* (see below). **PRICKLY PEAR** (see that title). **PEAR-SHAPED**, a. ovate beneath and conical, like a pear. **THE PEAR IS RIPE**, the matter has come to maturity

**PEAR** (*Pyrus communis*): tree of the same genus with the Apple (see **PYRUS**), and like it one of the most extensively cultivated and valuable fruit-trees of temperate climates. The leaves are ovate, serrated, smooth on both surfaces, and without glands; the flowers are produced in corymbs, which may almost be called umbels, and are smaller than those of the apple; the styles are distinct and not combined at the base, as in the apple; and the fruit is hemispherical at one end, tapering gradually away, more or less rapidly, to a point at the other. The tree grows wild in central and s. portions of Europe and in large portions of Asia. In this condition it is only a small tree—often nothing more than a shrub; but under cultivation it sometimes reaches a height of 60 ft., and the trunk a diameter of 1 to 2½ ft. Though somewhat difficult to start, it becomes, when well established, very vigorous, and lives to a great age. The Stuyvesant P. tree, planted 1648 at the point now the corner of 13th st. and 3d ave., New York, was yielding fruit at the age of 200 years, and there are several trees in Europe known to be about 400 years old. The P. was introduced probably

## PEAR.

by the Romans into Britain, and cultivated in early times by various nations; but no great improvement in the quality of the fruit seems to have been made till the 17th c. Now there are more than 1,000 varieties, many of which have a delicate flavor widely different from the coarse quality of the original stock. The tree is grown almost entirely for its fruit, though the wood, of reddish color and very hard and fine-grained, is in demand for various purposes, and is sometimes stained to imitate ebony.

The P. thrives throughout the United States except in limited areas, and on nearly all soils that are naturally or artificially drained; but thrives especially on heavy loams and clays. The ground should be kept fertile by application of lime and ashes, or commercial fertilizer. An exhausted soil is a frequent cause of a poor quality of fruit. The P. is propagated from seeds, buds, and root-grafts, the last two methods reproducing the specific variety (see BUDDING: GRAFTING). It is grown as a standard or as a dwarf, the former being budded or grafted on a pear stock; and the latter being worked usually on the quince. Standard trees should be set 20 to 25 ft. apart, and dwarfs 10 to 12 ft.; but in planting a large number of trees it is well to put a row of dwarfs between each two rows of standards and a dwarf between every two standards in the row. The standards require about 10 years to come into bearing, but the dwarfs will yield good crops in 5 years. The dwarfs will interfere but little with the growth of the standards, and by the time the latter have come into full bearing the dwarfs will begin to decline, and can be removed. Some varieties thrive better as dwarfs than as standards; with a large number of sorts there is no apparent difference, but a few cannot be profitably grown on the quince. A proper selection of varieties will enable the grower to have fruit from midsummer till the next spring. Large and beautiful specimens are often obtained from young trees, but, as a rule, fruit of the finest flavor is borne by trees that have reached maturity. More than with most other fruits the quality of the P. is influenced by soil and climate. Some sorts, very fine in good land and with good care, prove of little value when planted in a poor soil and neglected. Some of the European varieties of good quality in their native countries do not thrive in the United States, though others prove fully as good here as in their earlier home.

Cultivation of the land increases growth of the tree, but is thought by some to render it more susceptible to attacks of the blight. When grown in grass a circle of several ft. around the trunk should be heavily mulched. By this means grass and weeds will be kept down, and the roots of the tree will be kept at a more uniform temperature than would otherwise be possible. Pruning should receive careful attention, the objects being to keep the tree in proper form and to remove all sickly or feeble shoots. In some varieties there is a strong tendency to overbearing, and a prompt thinning of the fruit becomes essential to the health of the tree, and greatly improves the quality of the

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product. Excepting a very few sorts pears should be gathered 10 days to 2 weeks before they are ripe. They should be placed in shallow trays and kept in a dark room in which the temperature ranges from 60° to 70°. By means of the cold-storage method the ripening process may be delayed for months (see FRUIT—*Keeping of Fruit*). Winter pears can safely remain on the tree till the leaves fall or till sharp frosts occur. The P. is attacked by various insect enemies. These can be destroyed by the prompt and, if necessary, repeated use of a kerosene emulsion (made by thoroughly mixing 2 parts of kerosene with 1 part of soft soap and diluting with 20 to 40 parts of water) sprayed over the trees. The principal diseases of the P. are the fire-blight and the leaf-blight. The fire-blight is a fungoid disease, attacks weak and imperfectly nourished trees, causes a blackened appearance of the leaves and branches, and, if not promptly checked, destroys the tree. All diseased portions of an affected tree should be cut away and burned as soon as the first indication of disease appears. The leaf-blight works great injury to seedlings in the nursery, and often attacks larger trees, causing their leaves to fall about midsummer, checking growth of the tree and involving loss of the fruit. Spraying the trees with the Bordeaux mixture (made from solutions of sulphate of copper and fresh lime) of strength varying with the age and vigor of the tree, seems the most promising remedy. Preventive measures consist in maintaining a vigorous condition of the tree.

In England the juice of the P. is expressed in the same way as cider from apples, and under the name of Perry is largely used as a beverage. It contains 5 to 9 per cent. of alcohol. The best quality is made from the coarser-flavored varieties of the fruit, and large orchards are grown specially for its production. The pear is used not only fresh, but is also preserved.

The following table shows the percentages of the ash constituents of the various portions of the P., and furnishes an indication of the rapidity with which these elements of fertility are abstracted from the soil in which it is grown.

	Potash.	Soda.	Lime.	Phosphoric Acid.	Sulphuric Acid.
Wood	23.5	—	67.0	6.2	3.4
Leaves	26.6	—	46.5	8.1	3.9
Fruit	51.7	8.5	8.0	15.3	5.7

Many fine varieties of the P. have been obtained from hybridization, by selection, and from accidental seedlings. The Le Conte and the Kieffer are selected seedlings from the almost worthless Sand P., imported from China. The Seckel originated near Philadelphia, and was disseminated from a single tree. The Bartlett, which supplies at least three-fourths of the pears grown for market in the United States, originated in England; but the stock in this country can be traced to 2 trees owned by Enoch Bartlett, of Dorchester, Mass., from whom it received its American name. The *Jargonelle* and many of the varieties known as *Bergamot* and *Beurré* are highly esteemed. We are indebted to France and Belgium for many fine varieties.

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Besides the varieties of pear usually referred to *Pyrus communis*, some are occasionally cultivated which are generally regarded as distinct species. Such are the AURELIAN PEAR (*P. salvifolia*), native of France, with leaves much narrower than the common pear, and a long fruit, which is used for making perry; the SNOWY PEAR (*P. nivalis*), native of the Alps of Austria, with oval obtuse leaves white and silky beneath, and a globose fruit, which is very acid till it becomes quite ripe or is beginning to decay, when it is very sweet, the SAND PEAR (*P. sinensis*), native of China and Cochin-China, with heart-shaped, shining, almost evergreen leaves, and apple-shaped warted fruit, very gritty, and fit only for baking, cultivated in gardens in India. The PASHIA (*P. pashia* or *P. variolosa*), a native of the Himalaya, yields fruit edible only when bletted or partially decayed. The PALTOO (*P. lanata*) is another Himalayan species with edible fruit.

PEARL, n. *perl* [F. *perle*; It. *perla*; OHG. *perala*; Port. *perola*, a pearl: mid. L. *perŭla*—probably dim. of *pirium*, a pear: comp. Ger. *beere*, a berry]: a hard, smooth, small body, of a white iridescent color and round shape, found in species of oyster, and in other bivalves, highly valued for its beauty (see below): *figuratively*, something very precious: anything round or bright, e.g., a drop of rain: a small printing-type: V. to set or adorn with pearls; to resemble pearls. PEARL'ING, imp. PEARLED, pp. *perld*: ADJ. adorned or set with pearls; resembling pearls. PEARLACEOUS, a. *perl-ā'shŭs*, resembling mother-of-pearl. PEARL'Y, a. -*lŭ*, clear, pure, and iridescent, like a pearl; containing pearls. PEARL'INESS, n. -*nēs*, state of being pearly. PEARLASH, an impure carbonate of potassa obtained from the ashes of wood (see POTASH). PEARL BARLEY, finely prepared barley-grains (see BARLEY). PEARL DIVER, one of the men whose employment is to dive in the Indian seas for oysters that contain pearls. PEARL EDGE, projections at the side of ribbons; a narrow kind of thread-edging to be sown to lace. PEARL-EYED, a. having a white speck on the eye. PEARL GRASS or WORT, the common name for certain British wild plants of the ord. *Caryophyllaceæ*. PEARL-OYSTER, a bivalve from which pearls are obtained (see below). PEARL SAGO, a sago in the form of small, hard grains. PEARL SINTER, a volcanic mineral occurring in smooth, shining, globular masses. PEARL SPAR or STONE, a variety of feldspathic lava containing globules from the size of a grain of sand to that of a hazel-nut, having a glassy and pearly lustre; a variety of dolomite having a pearly lustre. PEARL STITCH, an ornamental stitch in knitting stockings. PEARL-STUDDED, a. studded with pearls. PEARL WHITE, a preparation of bismuth (see WHITE COLORS). PEARL-SHELL, or MOTHER-OF-PEARL, the inside surface or lining of pearl-oysters and other shells (see MOTHER-OF-PEARL).

PEARL: peculiar product of certain marine and fresh-water mollusks or shell-fish. Most of the molluscous animals which are aquatic and inhabit shells are provided with a fluid secretion, with which they line their shells,

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giving to the otherwise harsh granular material, of which the shell is formed, a beautifully smooth surface, which prevents any unpleasant friction upon the extremely tender body of the animal. This secretion is evidently laid in extremely thin semi-transparent films, which, in consequence of such an arrangement, have generally a beautiful iridescence, and form in some species a sufficient thickness to be cut into useful and ornamental articles. The material itself in its hardened condition is called *nacre* by zoologists, and by dealers Mother-of-pearl (q.v.). Besides the pearly lining of the shells, detached and generally spherical or rounded portions of the nacre are often found on opening the shells, and there is reason to suppose these are the result of accidental causes, such as the intrusion of a minute grain of sand or other substance, which, by irritating the tender body of the animal, obliges it in self-defense to cover the cause of offense which it has no power to remove; and as the secretion goes on regularly to supply the growth and wear of the shell, the included body constantly gets its share, and thereby continues to increase in size until it becomes a pearl. The Chinese avail themselves of the knowledge of this fact to compel one species of fresh-water mussel, *Unio Hyrci*, to produce pearls. In order to do this, they keep the Unios in tanks, and insert between the shell and the mantle of the animal either small leaden shot or little spherical pieces of mother-of-pearl. These are sure to receive regular coatings of the nacreous secretion; and after a time look like pearls formed under natural conditions. These ingenious people practice another trick on these animals: they insert small images of the Buddha stamped out of metal, which soon become coated with the pearl-secretion, and are cemented by it to the shells; to those ignorant of its origin, the phenomenon is a supernatural testimony to the truth of Buddhism. Examples of these curiosities are in many museums in western lands.

A plan of making pearls was suggested to the Swedish govt. by Linnæus. It consisted in boring a small hole through the shell of the river mussel, and inserting a grain of sand, so as to afford a nucleus for a pearl. The plan at first succeeded so far as to indicate its practicability, and he was rewarded by a sum of money, about \$2,200, but it failed to be commercially profitable, and was abandoned.

The exact nature of the secretion has not been determined; it is, however, ascertained that it is deposited in thin films, which overlie each other so irregularly, that their sharply serrated edges, when magnified, present the appearance represented in fig. 1; and to this peculiar disposition of the plates, the beautiful iridescence of common pearls is attributed. Their formation was a great puzzle to the ancients, among whom

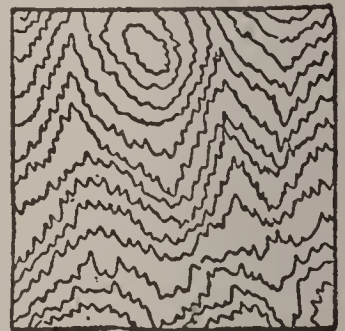


Fig. 1.



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they were very highly prized. Dioscorides and Pliny mention the belief that they were drops of dew or rain which fell into the shells when opened by the animal, and were then by some power of the animal altered into pearls. This opinion, which obtained all over the east is thus charmingly alluded to by Moore:

‘And precious the tear as that rain from the sky,  
Which turns into pearls as it falls in the sea.’

The most famous pearls are from the east; the coast of Ceylon, or Taprobane as it was called by the Greeks, having from earliest times been the chief locality for P. fishing. They are, however, obtained now of nearly the same quality in other parts of the world, e.g., Panama in Central America, St. Margarita in the W. Indies, the Coromandel Coast, the shores of the Sooloo Islands, the Bahrein Islands, and the islands of Karak and Corgo in the Persian Gulf. The pearls of the Bahrein fishery are said to be even finer than those of Ceylon, and they form an important part of the trade of Bassora. These, and indeed all the foreign pearls used in jewelry, are produced by the Pearl Oyster (q.v.). The shells of the mollusks which

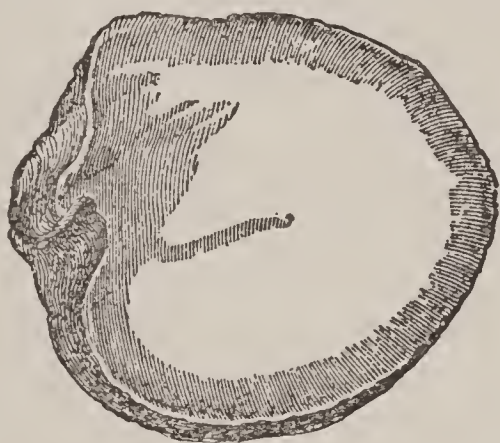


Fig. 2.

yield the Ceylon, Indian, and Persian ones, are sometimes 12 inches in diameter, and usually about nine inches. Those of the new world, though the shells are smaller and thicker, are believed to be the same species. The chief locality of the Ceylon pearl fishery is a bank about 20 m. long, 10 or 12 m. from shore, opposite to the villages of Condatchy and Arippe on the n. coast. The season of the fishery lasts about three months, commencing at the beginning of Feb., and the fishery is under govt. regulations. The boats employed are open, and of 10 to 15 tons burden; they put out at night, usually at 10 o'clock, on a signal gun being fired from the fort of Arippe, and make for the govt. guard vessel, which is moored on the bank, and serves the double purpose of a guard and a light-ship. The divers are under the direction of a manager, called the Adapanaar, and they are chiefly Tamils and Moors from India. For each diver there is provided a diving stone, weighing about thirty lbs. which is fastened to the end of a rope long enough to reach the bottom, and having a loop made for the man's foot; and in addition to

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this, a large net-work basket, in which to place the pearl oysters as he collects them. This apparatus is hung over the sides of the boat; and the diver, placing his foot in the loop attached to the stone, liberates the coils of the rope, and with his net-basket rapidly descends to the bottom. To each boat there is usually allotted a crew of 13 men and 10 divers, 5 of whom are descending while the others are resting. This work is done very rapidly; for, notwithstanding the stories to the contrary, the best divers cannot remain longer than 80 seconds below, and few are able to exceed 60. The greatest depth to which they descend is 13 fathoms, and the usual depth about 9 fathoms. When the diver gives the signal by pulling the rope, he is quickly hauled up with his net and its contents. Accidents rarely happen; and as the men are very superstitious, their safety is attributed to the incantations of their shark charmers, performed at the commencement of the fishing. Sir E. Tennent, however, attributes the rarity of accidents from sharks, usually so abundant in tropical seas, to the bustle and to the excitement of the waters during the fishery frightening them away. The divers are sometimes paid fixed wages, others agree for one-fourth of the product. When a boat-load of oysters has been obtained, it returns to shore, and the cargo, amounting sometimes to 20,000 or 30,000, is landed and piled on the shore to die and putrefy, in order that the pearls may be easily found. The heaps are formed in small compartments, each with walls one or two ft. high. Several of these compartments surround a small central inclosure, in which is a bath, and they slope toward this bath, and are each connected with it by a small channel, so that any pearls washed out from the putrefying mass by the rain may be carried into the bath. When the animals in the shells are sufficiently decomposed, the washing commences, and great care is taken to watch for the loose pearls, which are always by far the most valuable; the shells are then examined, and if any attached pearls are seen they are handed over to the clippers, who, with pincers or hammer, skilfully remove them. Such pearls are used only for setting; while the loose ones, usually quite round, are drilled and strung, and can be used for beads, etc. The workmen employed to drill the pearls also round the irregular ones, and polish them with great skill. The method of holding the pearls during these operations is ingenious; they make a number of holes of small depth in a piece of dry wood, and into these they fit the pearls, so that they are only partly below the surface of the wood, which they then place in water. As it soaks up the water and swells, the pearls become tightly fixed, and are then perforated, etc. These operations are all carried on on the spot.

For many miles along the Condatchy shore, the accumulation of shells is enormous, averaging at least four ft. in thickness. This is not wonderful, when it is remembered that this fishery has been in active operation for at least 2,000 years. The place itself is exceedingly barren and dreary, and, except during the fishing season, is almost

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deserted; but at that time, thousands of people, of various countries and castes, are here drawn together. The Ceylon fishery fluctuates much from year to year. In 1874, it was worth only about \$35,000 to the government; in 1881, about \$300,000 (17,000,000 shells being landed in 40 days).

The pearls vary much in size; those as large as a pea and of good color and form are the best, except unusually large specimens, which are rare, the most extraordinary one known being that owned by the late Mr. Hope, which was two inches in length and four in circumference, and weighed 1,800 grains. The smaller ones are sorted into sizes, the very smallest being called seed-pearls. A considerable quantity of these last are sent to China, where they are said to be calcined, and used in Chinese pharmacy. Among the Romans, the P. was a great favorite, and enormous prices were paid for fine ones. One author gives the value of a string of pearls at 1,000,000 sesterces, or almost \$40,000. The single pearl which Cleopatra is said to have dissolved and swallowed was valued at nearly \$400,000; and one of the same value was cut into two pieces for ear-rings for the statue of Venus in the Pantheon at Rome. In later times, we read of a pearl, in Queen Elizabeth's reign, belonging to Sir Thomas Gresham, valued at about \$75,000, and which he is said to have treated after the fashion of Cleopatra; for he powdered it and drank it in a glass of wine to the health of the queen, in order to astonish the ambassador of Spain, with whom he had laid a wager that he would give a more costly dinner than could the Spaniard.

During the occupation of Britain by the Romans that country became famous for its pearls found in the fresh-water mussel of the rivers: see FRESHWATER MUSSEL. Generally the pearls of this mollusk are small, badly colored, and often valueless; but occasionally they occur of such beauty as to rival those of the pearl-oyster. Several years ago, in the Scotch rivers, the search for pearls was prosecuted vigorously, especially by a merchant named Unger, of Edinburgh, who had brought Scotch pearls into great repute. He collected specimens ranging in value, as was stated, from about \$25 to \$450 each, and formed a necklace said to be worth about \$1,500. In Scotch pearls of the highest quality there is a pleasing pinkish tint, which is very permanent. The fishing for pearl-mussels is much less dangerous and troublesome than for pearl-oysters: they are found usually in the beds of streams, shallow enough to wade in, and so clear that the pearls can be seen at the bottom. If too deep to remove with the hand, they are easily captured by putting a stick between their gaping shells, which instantly close upon it and can be drawn out with it.

Very fine river pearls, known on the European continent as Bohemian pearls, are found in the rivers Moldau and Wottawa. There is also a fresh-water P. fishery in Bavaria, where the river Iltz yields at times very fine specimens. Even the most inferior pearls have a market

## PEARL—PEARL-OYSTER.

value; for pearls can be properly polished and rounded only with pearl-dust, which is made by powdering the inferior pearls.

*False Pearls* are admirable imitations, made by blowing very thin beads or bulbs of glass, and pouring into them a mixture of liquid ammonia, and the white matter from the scales of the Bleak (q.v.), and sometimes of the Roach and Dace. The proper way to prepare the pearl-matter is first to remove the scales of the lower part of the fish; these must then be very carefully washed, after which they are put to soak in water, when the pearly film falls off and forms at the bottom of the vessel a sediment which is removed and placed in liquid ammonia for future use. This P. mixture, when of the best quality, is very costly—as much as \$20 or \$25 per ounce. For use, it is diluted with ammonia, and injected into the glass beads, so as to thinly coat them inside; afterward the better kinds have melted white wax poured in, which renders them much more durable. The French and Germans produce in this way imitations of the finest oriental pearls, of such beauty that the most practiced eye can scarcely detect the difference. The invention of artificial pearls is due to a Frenchman, named Jaquin, in the time of Catharine de' Medici; and the manufacture is now carried on chiefly in the dept. of the Seine, where great improvements have lately been made, especially in the art of giving the irregular forms of large pearls to the glass bulbs, and thus increasing the resemblance, and in removing the glassy appearance caused by the exterior glass coating, by exposing it for a short period to the action of the vapor of hydrofluoric acid. Mucilage of fine gum-arabic also is used instead of wax; which increases the translucency, gives greater weight, and is not liable to melt with the heat of the wearer's body—a defect to which those filled with wax are very liable.

*Roman Pearls* differ from other artificial pearls, by having the coating of pearly matter on the outside, to which it is attached by an adhesive substance. The art of making these was derived from the Chinese.

PEARL RIVER: stream in Miss., rising about 100 m. n.n.e. of Jackson, and flowing s. through the state, separating Miss. from La. in its lower course and emptying into Mississippi Sound, near the outlet of Lake Pontchartrain. It flows nearly 300 m. through a fertile cotton country, and is navigable to Jackson, the capital.

PEARL-OYSTER (*Avicula* or *Meleagrina margaritifera*): lamellibranchiate mollusk, of family *Aviculidæ*, usually found—great numbers together—attached to submarine rocks at considerable depth on the coasts of tropical countries; and important as producing almost all the pearls and all the mother-of-pearl of commerce. It is called sometimes the PEARL-MUSSEL; but the family to which it belongs differs considerably both from that of mussels and from that of oysters; the valves of its shell being unequal, the hinge-line straight and long, and the animal furnished

## PEARMAIN—PEARSON.

with two adductor muscles, one of them small, and with a foot by which it produces a byssus. The P. O. is of oblique oval form, longitudinally ribbed, and with concentric foliations when young which disappear when it is old. It attains a large size; and there are several varieties: for the most important, see MOTHER-OF-PEARL. The whole inside of the shell is covered with a thick layer of nacre or mother-of-pearl, compact and beautiful, forming indeed the chief part of the shell, and exhibiting considerable variety of color, most frequently white, sometimes blood-red. Pearls are formed of the same substance (see PEARL), and are generally produced by eggs which have become abortive, and which remain lodged within the mollusk instead of being ejected into the sea.—The P. O. is too rank and coarse to be eaten. When taken from the sea it is commonly laid out in the sun to die, that the pearls may be sought for after the shell opens.—The P. O. is not the only mollusk which produces pearls. The *Placuna placenta*—an oyster (family *Ostreadæ*) with thin transparent shell used in China and elsewhere as a substitute for window-glass—produces diminutive pearls. The Fresh-water Mussel (q. v.) produces pearls sometimes of considerable beauty and value; and pearls have been found in the common oyster, in pinnae, etc., and even in limpets.

PEARMAIN, n. *pār'mān* [F. *parmain*]: a variety of the apple.

PEARSON, *pēr'son*, JOHN, D.D.: English prelate of high celebrity: 1612, Feb. 28—1686, July 16; b. at Great Snoring, in Norfolk, of which place his father was rector. He was educated at Eton and King's College, Cambridge, where he took the degree M.A. 1639, and in the same year took orders, and was collated to a prebend in Salisbury Cathedral. In 1640 he was appointed chaplain to Finch, lord-keeper of the great seal; and on the outbreak of the civil war became chaplain to Lord Goring, and afterward to Sir Robert Cook, in London. In 1650, he was appointed minister of St. Clement's, Eastcheap, London; and 1659 published the great work by which he is now remembered, *An Exposition of the Creed*. It was dedicated to his flock, to whom the substance of it had been preached some years before in a series of discourses. The laborious learning and the judicial calmness evinced by the author in this treatise have long been acknowledged, and command the respect even of those who think his elaborate argumentation tedious and not always forcible. It is generally reckoned one of the ablest works produced in the greatest age of English theology—the 17th c. During the same year, P. published *The Golden Remains of the Ever Memorable Mr. John Hales of Eton*. At the Restoration, honors and emoluments were lavishly showered upon him. Before the close of 1660 he received the rectory of St. Christopher's, in London; was created D.D. at Cambridge; installed prebendary of Ely and archdeacon of Surrey; and made master of Jesus College, Cambridge. In 1661 he obtained the Margaret professorship of divinity, and was one of the

## PEARY.

most prominent commissioners in the famous Savoy conference; 1662 he was made master of Trinity, Cambridge, and 1673 was promoted to the bishopric of Chester. In 1672 he had published *Vindiciæ Epistolarum S. Ignatii*, in answer to Daillé, who had denied the genuineness of the epistles. It was imagined for years that P. had triumphed over his opponent. The history of the controversy, however (see IGNATIUS), has since been deemed to show that Daillé was right and P. wrong. In 1684 appeared his *Annales Cyprianici*. P.'s *Opera Posthuma Chronologica* were pub. by Dodwell (Lond. 1688), and his *Orationes, Conciones et Determinationes Theologicæ* contain much valuable matter; for, as Bentley used to say, P.'s 'very dross was gold.' Bp. Burnet thought him 'in all respects the greatest divine of his age.'

PEARY, ROBERT EDWIN; 1854— — — — — ; b. Penn.: arctic explorer. At an early age he removed with his parents to Maine; graduated at Bowdoin College, afterward at the U. S. Milit. Acad. In 1885 he was appointed civil engineer in the U. S. navy, with rank of lieutenant. In 1886 he made a journey to Greenland. In 1891, June, he sailed from New York in the *Kite*, and made his headquarters on the w. coast of Greenland, at McCormick Bay, 77° 45' n. lat., 71° w. long., from which point he made extensive sledge-excursions reaching 82° n. lat., and proving Greenland to be an island, as he saw the channel that forms its n. boundary at its w. outlet, and followed it until he saw it join the Arctic Ocean on the e. He returned in the summer of 1892, and devoted himself to an extended lecturing tour in the United States.

In 1893 two expeditions under Lieut. P.'s command sailed for Greenland, the main expedition leaving St. John's, N. B., in July, and the Peary Auxiliary Expedition sailing from New York, June 30, to rendezvous at Bowdoin Bay, Inglefield Gulf, 77° 43' n. lat., 35 m. n. of McCormick Harbor. On Sep. 12 a daughter was born to Mr and Mrs. P. at Falcon Harbor. In 1894, Mar. 6, P. started on an overland journey, but was driven back by violent and continued storms. Much scientific information was gained by the two expeditions, whose members returned to St. John's 1894, Sep. 15, with the exception of Lieut. P., Hugh J. Lee, and a colored servant, who remained at the north to resume exploration the following year.

In 1895, Apr. 1, P. started with a companion and servant and a supporting party of natives. He reached Independence Bay, but at the cost of great suffering and peril, the unprecedentedly heavy snows of the preceding winter having buried his caches of food beyond recovery, and obliterated the marks. The natives deserted, only one of the dogs survived, and for the last two weeks of the return-trip the three men lived on one meal a day, reaching Bowdoin Bay July 25. Aug. 4 the relief expedition arrived with the *Kite*, on which all returned, reaching St. John's Sep. 21. Among important scientific results was the finding of a meteorite weighing 40 tons.

In 1896 P. led a sixth expedition in the steamer *Hope*,

## PEAS—PEASANT WAR.

leaving Sydney, Cape Breton, July 15, and returning Sep. 26.

In 1897 P. conducted a new expedition to n. Greenland, returning to Sydney, Cape Breton, Sept. 20; in 1898, July, 1902, Sept., made another expedition, during which he rounded the Greenland archipelago.

**PEAS** and **PEASE**: see under **PEA**.

**PEASANT**, n. *péz'ánt* [F. *paysan*; OF. *paisant*, a peasant—from mid. L. *pagen'sis*, a countryman: F. *pays*; It. *paese*, country—from L. *pagus*, a village or canton]: one occupied in rural labor; a countryman; a rustic; a hind; a swain: **ADJ.** of or relating to peasants; rural. **PEAS'ANT-RY**, n. *-rî*, the body of country people; the rustics taken together. *Note.*—It will be seen from the root-words that *peasant* and *pagan* have the same origin, the primary meaning of each being 'the inhabitant of a village': see **PAGAN**.

**PEAS'ANT WAR**: in German history, the great insurrection of the peasantry which broke out in the beginning of 1525, and which Zschokke has described as the 'terrible scream of oppressed humanity.' The oppression of the peasants had gradually increased in severity, as the nobility became more extravagant and the clergy more sensual and degenerate. The example of Switzerland encouraged the hope of success, and 1476–1517 there were risings here and there among the peasants of s. Germany. A peasant rebellion, called, from its cognizance, the *Bundschuh* (Laced Shoe), took place in the Rhine countries 1502; and another, the 'League of Poor Conrad,' in Würtemberg 1514; both of which were put down without any abatement of the grievances which occasioned them. The Reformation, by the mental awakening which it produced, and the diffusion of sentiments favorable to freedom, must be reckoned among the causes of the great insurrection itself; though Luther, Melancthon, and the other leading reformers, while urging the nobles to justice and humanity, strongly reprobated the violent proceedings of the peasants. The Anabaptists, however, in particular Münzer, encouraged and excited them; and a peasant insurrection took place in the Hegau 1522. Another, the 'Latin War,' arose 1523 in Salzburg, against an unpopular archbishop, but these were quickly suppressed. 1525, Jan. 1, the peasantry of the abbacy of Kempten, with the townspeople, suddenly assailed and plundered the convent, compelling the abbot to sign a renunciation of his rights. This proved the signal for a rising of the peasants on all sides throughout s. Germany. Many of the princes and nobles at first regarded the insurrection with some complacency, because it was directed in the first instance chiefly against the ecclesiastical lords; some, too, because it seemed likely to promote the interests of the exiled Duke of Würtemberg, who was then on the point of reconquering his dominions by the help of Swiss troops; and others, because it seemed to set bounds to the increase of Austrian power. But Archduke Ferdinand hastened to raise an army, the troops of the empire being mostly engaged in

## PEASANT WAR.

the emperor's wars in Italy, and intrusted the command of it to the Truchsess von Waldburg, a man of stern and unscrupulous character, but of ability and energy. Von Waldburg negotiated with the peasants to gain time, and defeated and destroyed some large bodies of them, but was himself defeated by them 1525, Apr. 22, when he made a treaty with them, but with not the slightest intention of keeping it. Meanwhile the insurrection extended, and became general throughout Germany, and a number of towns took part in it, e.g., Heilbronn, Mühlhausen, Fulda, Frankfurt, etc.; but there was total lack of organization and co-operation. Toward Easter, 1525, there appeared in Upper Swabia a manifesto, which set forth the grievances and demands of the insurgents. They demanded the free election of their parish clergy; appropriation of the tithes of grain, after competent maintenance of the parish clergy, to support of the poor and to purposes of general utility; abolition of serfdom, and of the exclusive hunting and fishing rights of the nobles; restoration to the community of forests, fields, and meadows, which the secular and ecclesiastical lords had appropriated to themselves; release from arbitrary augmentation and multiplication of services, duties, and rents; equal administration of justice; and abolition of some of the most odious exactions of the clergy. The conduct of the insurgents was not, however, in accordance with the moderation of their demands. Their many separate bands destroyed convents and castles, murdered, pillaged, and were guilty of the greatest excesses, which must indeed be regarded as partly in revenge for the cruelty practiced against them by Von Waldburg. A number of princes and knights concluded treaties with the peasants conceding their principal demands. The city of Würzburg joined them, but the Castle of Liebfrauenberg made an obstinate resistance, which gave time to Von Waldburg and their other enemies to collect and strengthen their forces. In May and June, the peasants sustained a number of severe defeats, in which large bodies of them were destroyed. The Landgraf Philip of Hesse also was successful against them in n. Germany. The peasants, after they had been subjugated, were everywhere treated with terrible cruelty. In one instance a great body of them were perfidiously massacred after they had laid down their arms. Multitudes were hanged in the streets, and many were put to death with the greatest tortures. Weinsberg, Rothenburg, Würzburg, and other towns which had joined them, suffered the terrible revenge of the victors, and torrents of blood were shed. It is supposed that more than 150,000 persons lost their lives in the Peasant War. Flourishing and populous districts were desolated. The lot of the defeated insurgents became harder than ever, and many burdens of the peasantry originated at this period. The cause of the Reformation also was very injuriously affected. See Sartorius, *Versuch einer Geschichte des Deutschen Bauernkriegs* (Berl. 1795); Ochsle, *Beiträge zur Geschichte des Deutschen Bauernkriegs* (Heilbronn 1829); Wachsmuth, *Der Deutsche Bauernkrieg*



## PEASLEE—PEAT.

(Leip. 1834); and Zimmermann, *Allgemeine Geschichte des grossen Bauernkriegs* (3 vols., Stuttg. 1841-43).

PEAS'LEE, EDMUND RANDOLPH, M.D., LL.D.: 1814, Jan. 22—1878, Jan. 21; b. Newton, N.H. He graduated from Dartmouth College 1836, studied medicine at Yale, and commenced practice at Hanover, N. H., 1841. He was prof. of anat. and surgery at Dartmouth College 1842-70, was also prof. at Bowdoin College 1845-60, and in the New York Medical College 1851-60. He removed to New York 1858, and resided there till his death. In 1872 he was appointed prof. of gynecology at Dartmouth College and at the medical college connected with Bellevue Hospital, New York, 1874. He was a prominent member of medical and gynecological societies, was a prolific writer for medical journals, and published *Human Histology* (1857) and *Ovarian Tumors and Ovariectomy* (1872).

PEA-STONE, or PISOLITE, *pī'sō-līt*, or PISIFORM LIMESTONE, *pī'sī-fawrm*: kind of calcareous spar or limestone, which occurs in globules from one-eighth of an inch to half an inch in diameter, imbedded in a cement of similar substance. There is generally a grain of sand in the centre of each globule as the nucleus around which it has been formed; and the concentric plates of its structure are easily visible. Sometimes the nucleus is merely a bubble of air. P. is found in great masses near the hot springs of Carlsbad, in Bohemia. It is sometimes used for ornamental purposes.

PEAT, *pēt* [OE. *beating*, turf for fuel; *bete*, to mend or kindle a fire; *beats* or *peats*, the turfs consumed: AS. *betan*, to amend, to repair: Scot. *beit*, to add, to supply]: natural accumulation of decayed vegetable substances in swampy districts, occurring in strata more or less deep. PEATS, n. plu. *pēts*, peat cut into pieces of the shape and size of a brick, dried in the sun, and used as fuel. PEATY, a. *pēt'ī*, consisting of peat. PEAT BOG, an accumulation of peat more or less extensive, and soft and swampy. PEAT MOSS, district covered with undisturbed peat soil. PEAT SOIL, peat moss that has been reclaimed for agricultural purposes.—*Peat* is formed by decomposition of plants amid much moisture, as in marshes and morasses; and sometimes described as a kind of *Humus* (q. v.), formed by the accumulation of the remains of mosses and other marsh-plants. The remains of the plants are often so well preserved in it, that the species can be easily distinguished. Reeds, rushes, and other aquatic plants may usually be traced in peat, and stems of heath are often abundant in it; but it chiefly consists, in the n. parts of the world, of different species of *Sphagnum* (q. v.), or Bog-moss. Mosses of this genus grow in very wet situations, and throw out new shoots in their upper parts, while their lower parts are decaying and being converted into P.; so that shallow pools are gradually changed into bogs. It was formerly believed that bogs owed their origin to the destruction of forests, the fallen trees impeding the natural drainage and causing the growth of those marsh-plants of which P. is formed; and this

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theory was supported by reference to instances supposed to be authenticated by tradition—as that of the moor of Hatfield, in Yorkshire, England, now consisting of about 12,000 acres of P., and said to have been a forest of firs, till ‘the Romans under Ostorius, having slain many Britons, drove the rest into the forest,’ which was then destroyed by the victors. There are, however, satisfactory proofs that P. has accumulated in many places around trees; and firs remaining in their natural position have been found to have six or seven ft. of P. under their roots, though other trees, as oaks, are commonly found with their stumps resting on the soil beneath the P. Yet it is probable that the destruction of forests may, in some instances, by impeding the course of the streams which flowed through them, have caused the stagnation of water from which the growth of P. resulted. Some of the largest mosses and fens of Europe occupy the place of forests, which were destroyed by order of Severus and other Roman emperors; and some of the British forests, now mosses, as well as some of those of Ireland, were cut down because they harbored wolves or outlaws. The overthrow of a forest by a storm in the 17th c. is known to have caused the formation of a *peat-moss* near Loch Broom, in Ross shire. Layers of trees are frequently found in P., which seem to have been suddenly deposited in their horizontal position, and sometimes to have been felled by human hands. It is probable, however, that sometimes P. has been formed where the soil has been exhausted by the long-continued growth of one kind of tree. The growth of P. is often rapid: bogs have been known to increase two inches in depth in a year. The surface of a bog sometimes becomes a floating mass of long interlaced fibres of plants, known in Ireland as *Old Wives’ Tow*. The vegetation on the surface is sometimes very green and compact, like a beautiful turf.

P., being vegetable matter more or less decomposed, passes by insensible degrees into Lignite (q. v.). The less-perfectly decomposed peat is generally of brown color; that which is fully decomposed is often nearly black. Moist P. possesses a decided and powerful antiseptic property, which is attributed to the presence of gallic acid and tannin, and is manifested not only in the perfect preservation of ancient trees and of leaves, fruits, etc., but sometimes even of animal bodies. Thus, in some instances, human bodies have been found perfectly preserved in P., after the lapse of centuries.

The formation of P. is one of the most important geological changes now in evident progress. It takes place, however, only in the colder parts of the world. In warm regions, the decay of vegetable substances, after life has ceased, is too rapid to permit its formation. The surface covered by P. is very extensive in all colder parts of the world; though in the s. hemisphere no moss seems to enter into its composition; and the S. American P. is said by Mr. Darwin to be formed of many plants, but chiefly of *Astelia pumila*, phanerogamous plant of the rush family. The surface covered by P. even in England is considerable; it is

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greater in Scotland, and very great in Ireland. Extensive tracts are covered with P. even in the s. countries of Europe, sometimes even near the sea; and in more northern regions, the *mosses* or *bogs* are still more extensive. For their physical characters, and the mode of *reclaiming* them, or converting them into arable land, see BOG.

Mere P. is not a good soil, even when sufficiently drained, but, by the application of lime, marl, etc., it is soon converted into good soil, yielding excellent crops. A mixture of P. is often a benefit to soils otherwise poor. And for many shrubs, as rhododendrons, kalmias, whortleberries, etc., no soil is so suitable as one in great part of peat.

P. is used extensively for fuel. The more perfectly decomposed the vegetable matter, and the more consolidated the peat therefore, the better is it suited for fuel. It is the ordinary fuel of great part of Ireland, and is there almost always called *turf*, though the term turf, in its ordinary English sense, is utterly unapplicable to it. To procure P. for fuel, the portion of bog to be operated upon must first be partially dried by a wide open drain; its surface is then pared off with the spade, to the depth of about six inches, to remove the coarse undecomposed vegetable matter; the P. is afterward cut out in pieces (*peats*) like bricks, by means chiefly of a peculiar implement, called in Ireland a *slane*, and in Scotland a *peat-spade*, resembling a long, narrow, sharp spade, the blade of which is furnished on one side with a tongue set at a right angle to it. This implement is used by the hands alone, without pressure of the foot. The soft peats are conveyed to some neighboring place, where they are set up on end in little clusters to dry. When sufficiently dry, they are conveyed away, and may be piled in outhouses or stacked in the open air. The operation of *peat-cutting* is performed in spring or summer.—Where P. for fuel cannot be obtained in the way above described, the black mud of a semi-fluid bog is sometimes worked by the feet of a party of men, women, and children until it acquires such a consistency that it can be molded by the hand. The process is laborious, but the fuel obtained by it is good.—In countries depending on P. for fuel, a very rainy season sometimes occasions great inconvenience, and even distress, by preventing the cutting and drying of the peat.

P. is a light and bulky kind of fuel, and cannot be conveyed to considerable distances without great expense. Efforts have been made, in Scotland and Ireland, to bring it into more general use, and so to promote the reclaiming of bogs, by compressing it until its specific gravity is nearly equal to that of coal: for this purpose, it is first reduced to a pulp. This process has not yet been advantageously prosecuted on an extensive scale.

P.-charcoal, made from uncompressed P., is very light and inflammable, and therefore unsuitable for many purposes, but for others it is particularly adapted, and no kind of charcoal excels it in antiseptic and deodorizing properties. It is also an excellent manure for many kinds

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## PEA WEEVIL—PEBBLE.

of soil, and great crops have been obtained by its use. P.-charcoal is highly esteemed for smelting of iron, and for working and tempering the finer cutlery. Charcoal made from compressed P. is in density superior to wood-charcoal, and is capable of being used as coke. The Irish Amelioration Soc., some years ago, encouraged the conversion of P. into charcoal, but it seems not to have succeeded as a commercial speculation, though the resulting charcoal was of good quality. The fact is similar regarding various companies formed for obtaining valuable products from the destructive distillation of P. It appears from researches of Sir R. Kane and others, that 1,000 parts of P. yield about 11 of sulphate of ammonia, 7 of acetate of lime, 2 of wood naphtha, 1 of paraffin, 7 of fixed oil, and 3 of volatile oil: see a Brit. parliamentary *Report on the Nature and Products of the Destructive Distillation of Peat*, 1851; and a paper by Dr. Paul, *The Chemical News*, VI. A more recent contribution to the subject is *The Peat Mosses of Buchan*—by the Rev. James Peter, minister of Deer (Aberdeen 1875).

Flower-pots are sometimes made of P. It is easy to transplant flowers growing in them without loosening the earth from the roots, the pot being readily cut to pieces; and liquid manure applied outside finds its way sufficiently to the roots.

PEA WEEVIL, or PEA-BUG (*Bruchus pisi*): the most formidable destroyer of the pea, causing immense damage to the crop every year. It has been disseminated throughout the United States and introduced into Canada. The eggs are deposited on the young pods, and the grubs hatched from them work their way into the peas. As the peas grow, the holes are covered. The grub feeds on the substance of the pea, but does not attack the germ. Consequently, infested peas will grow, but as they do not produce vigorous plants they should not be sown if others can be obtained. In the spring the weevil goes forth to perpetuate its species. It can be killed before it leaves the seed by placing the peas in a closed vessel and subjecting them to the fumes of bisulphide of carbon, turpentine, or chloroform; by placing them, as soon as shelled, for a few seconds in boiling water; or by keeping them 2 or 3 days in a tight box with a quantity of insect powder, and shaking them occasionally. If the seeds are kept in a tight box till the second year the weevils will perish. The injury already sustained cannot be remedied, but if all infested peas were promptly treated the numbers of the pest would be speedily diminished, and it might eventually be exterminated.

PEBBLE, n. *pěb'bl* [Dan. *pible*, to flow with small bubbles, to purl; Dut. *kubbelen*, to beat as waves upon the shore; As. *pabol*, a pebble; prob. allied to *bubble*, from the sound of water running among stones]: small, round, water-worn stone of any kind; but with jewellers and lapidaries sometimes an agate or a cornelian—since these are often found as loose pebbles in streams—those of Scotland in particular being popularly designated *Scotch Pebbles*.

## PEBRINE—PECCARY.

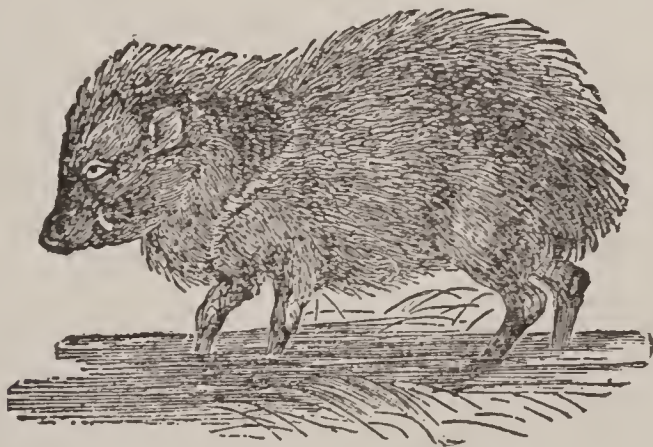
Hence the name has come even to be extended to rock crystal, when not in the crystalline form, and we hear of spectacles with eyes of pebble, etc. Deposits of pebbles (in the sense of water-worn-stones) occur among the rocks of all periods, but the pebbles are seldom loose; they are generally cemented together by iron, lime, or silex, forming a pudding-stone of greater or less hardness. Single pebbles are sometimes found in deposits which have been formed at a distance from currents in perfectly still water, as in chalk and fine silt. They must have been floated to their places entangled in the roots of trees, or attached to the roots of large buoyant sea-weeds. — BRAZILIAN PEBBLES (so called from Brazil having been long famous for the purity of its rock crystal), are very pure pieces of Rock Crystal (q.v.), used by opticians for the lenses of spectacles, etc. PEB'LED, a. *-bled*, covered or abounding with pebbles. PEBBLES, n. plu. *-blz*, a name given by lapidaries to various ornamental stones, differing much in color and appearance. PEB'BLY, a. *-bli*, full of pebbles.

PEBRINE, n. *pēbrīn* [F. *pēbrine*]: name in France for a disease of silk-worms, caused by minute organisms infesting their bodies in all stages of their existence: see SILK.

PECAN, or PECCAN, n. *pē-kān'* [F. *pacane*: Sp. *pacana*]: a N. Amer. tree and its fruit; a kind of nut; the *Car'yā olivæfor'mis*, ord. *Juglandācēæ*; a species of Hickory (q.v.).

PECCABLE, a. *pēk'ā-bl* [F. *peccable*; It. *peccabile*, peccable—from L. *peccab'ilis*—from *pecco*, I do amiss or transgress]: liable to sin; subject to transgress the divine law. PEC'CABIL'ITY, n. *-bīl'ī-tī*, the state or quality of being subject to sin. PEC'CADIL'LO, n. *-dī'lō* [Sp. *pecadillo*, a slight fault—from *pecado*, a sin, an excess—from L. *peccā-tum*, a sin]: a petty crime or fault. PEC'CANT, a. *-kānt* [F.—L.]: sinning; guilty; corrupt; offensive; bad. PEC'CANTLY, ad. *-lī*. PEC'CANCY, n. *-ān-sī*, bad quality; offense.

PECCARY, n. *pēk'ā-rī* [a S. Amer. name: F. *pécari*, a peccary] (*Dycoteles*): genus of *Pachydermata*, of the fam-



Peccaro (*Dycoteles torquatus*).

ily *Suidæ*, much resembling hogs; but having a mere tubercle instead of a tail; only three toes—no external toe—

## PECCAVI—PECK.

on the hind-feet; the molar teeth and incisors very like those of hogs, but the canine teeth not nearly so long, and not curving outward. An approach to ruminants is seen in the stomach, which is divided into several sacs; also in the union of the metacarpal and metatarsal bones of the two greater toes into a kind of cannon bone. A glandular opening on the loins, near the tail, secretes a fetid humor. Only two species are known, both natives of S. America; and except the tapirs, the only existing pachydermata of the American continent.—THE COMMON P., COLLARED P., or TAJAÇU (*D. torquatus*), is found in almost all parts of S. America, and ranges n. to the Red river of Ark. The WHITE-LIPPED P. (*D. labiatus*) is found in many parts of it. Both are gregarious; the White-lipped P., often assembling in very large herds, sometimes doing great mischief to maize and other crops. The herds of the White-lipped P. seem to follow a leader, like those of ruminants. The Common P. chiefly frequents forests, and small companies sometimes take up their abode in the hollow of a great tree. It is about 36 inches long, grayish; the hairs alternately ringed with black and yellowish white, bristly; and on the neck longer, and forming a mane. A narrow white collar surrounds the neck. The White-lipped P. is considerably larger, of darker color, with conspicuously white lips. The ears are almost concealed by the hair. Both species are capable of being tamed, but are of irritable and uncertain temper. In a wild state White-lipped defend themselves vigorously against assailants, making good use of their sharp tusks, and a whole herd combine for defense. The hunter has often to take refuge from them in a tree. Peccaries are omnivorous; and though hurtful to crops, render service by destroying reptiles. Their voice is somewhat like that of a hog, but more sharp. Their flesh resembles pork, but it is said to be inferior. The glands on the loins must be cut out immediately after the P. is killed, or their fetid humor infects the whole flesh. No attempts seem yet to have been made for economic domestication of the peccaries.

PECCAVI, n. *pěk-kā'vī* [L. I have sinned]: a word confessing error; an admission of having done wrong.

PECHBLENDE, n. *pěch'blěnd* [Ger. *pech*, pitch; *blende*, a blind]: an ore of uranium and iron—another name for PITCHBLENDE, which see under PITCH 1: also called PECHURANE. *pěch-ŭ-rān'*.

PE-CHIH-LE': see CHIH-LE.

PECK, v. *pěk* [Sp. *picar*, to peck, to nibble: F. *bec*, the beak of a bird; *becquer*, to peck with the beak—from mid. L. *beccus*, a beak: It. *becco*, the beak of a bird]: to strike with the beak, as a bird; to pick up food with the bill or beak; to dig or strike lightly with a pointed instrument. PECK'ING, imp. PECKED, pp. *pěkt*. PECK'ER, n. *-ér*, one who or that which pecks. WOODPECKER, a bird that pecks insects out of trees. TO PECK AT, to attack with petty and repeated criticism.

## PECK.

PECK, n. *pěk* [F. *picotin*, a peck; *pic*, a measure for flour containing about four of our pecks: comp. Gael. *peic*; Ir. *peac*, a peck]: measure of capacity for certain classes of goods, such as grain, fruit, etc., equivalent to 2 imperial gallons, or 554.548 cubic inches: it is thus the fourth part of a bushel (q.v.). The old Scotch peck, the 16th part of a boll, when of wheat, was slightly less than the imperial peck; but when of barley, was equal to about 1.456 of it.

PECK, HARRY THURSTON, PH.D., L.H.D.: philologist: 1856— ————; b. Stamford, Conn. He graduated at Columbia Coll., New York, 1881; was appointed instructor in Latin in Columbia 1882; later was lecturer on biblical Hebrew; succeeded Charles Short in the Latin chair, and, after studying in Berlin, was made prof. of Latin language and literature; was also lecturer in classical philology in Barnard Coll. for women. He was one of the original incorporators and a trustee of the Columbia Univ. Press, and sec. of the Columbia Coll. faculty. He became editor-in-chief of the *International Cyclopædia* (1892). In conjunction with Prof. E. M. Pease he prepared a series of Latin classics for college use. In 1895 he became editor of the *Bookman*. Prof. P. holds high rank among philologists and in general literary scholarship. Among his published works are: *The Semitic Theory of Creation* (1885); *Suetonius* (1889); *Latin Pronunciation* (1890); and *Classical Studies* (1894). He edited the *University Bulletin* (1891-95); *Harper's Dictionary of Classical Literature and Antiquities* (1896).

PECK, *pěk*, JESSE TRUESDELL, D.D.; bishop of the Meth. Episc. Chh.: 1811, April 4—1883, May 17; b. Middlefield, Otsego co., N. Y. He was educated at Cazenovia Seminary; became local preacher 1829; member of Oneida conference 1832; principal of Gouverneur Seminary 1837-41; of Troy Conference Acad. 1841-48; and pres. of Dickinson Coll., Penn., 1848-52. He was pastor of the Foundry Church, Washington, D. C., 1852-54; then sec. of the Meth. Episc. Tract Soc. in New York; and 1856-58 pastor of the Green Street Church there. He next served as pastor in San Francisco and Sacramento, Cal., 1859-66; and was pres. of the board of trustees of the Univ. of the Pacific and of the Cal. State Bible Soc. He returned to N. Y., and was pastor at Peekskill, Albany, and Syracuse, till 1872; was chief founder of the Syracuse Univ.; was made bp. 1872; went as delegate to the Meth. ecumenical conference, London 1881; and made a tour of Europe to study educational systems. He died in Syracuse. His chief works are *The Central Idea of Christianity* (1855), *The True Woman, or Life and Happiness at Home and Abroad* (1857), *What must I do to be Saved?* (1858), and *The History of the Great Republic considered from a Christian Standpoint* (1868).

PECK, JOHN JAMES: 1821, Jan. 4—1878, Apr. 21; b. Manlius, N. Y. He graduated from West Point Acad. 1843, and served with great credit in the Mexican war. His name was honorably mentioned in the official report

## PECK~PECTATE.

of several battles, he was brevetted capt. and major for brilliant service, and was presented a sword on his return home. He resigned from the army 1853, became connected with a railroad enterprise, was cashier of a bank in Syracuse, and became prominent in political circles. In the civil war he served with distinction at Yorktown, Fair Oaks, and other important points, commanded in N. C. and on the Canada border, was made brig.gen. vols. 1861, maj.gen. 1862, and was mustered out of the service 1865. He became pres. of a life-insurance co. in Syracuse, and retained the position till his death.

PECK, WILLIAM GUY, PH.D., LL.D.: 1820, Oct. 16; b. Litchfield, Conn. He graduated from West Point at the head of the class with Ulysses S. Grant 1844, was an engineer in Fremont's third expedition 1845, asst. prof. at West Point 1846-55; but meanwhile served in the Mexican war. He resigned his commission 1855, became prof. in the Univ. of Michigan, was adjunct prof. of math. in Columbia College 1857-61, and in the latter year became prof. of math., mechanics, and astron. in that institution, which position he held till death. Besides assisting in the compilation of Davies' *Dictionary and Cyclopædia of Mathematical Science*, and editing Ganot's *Natural Philosophy, Elementary Mechanics*, and *Popular Astronomy*, he has published a complete series of text-books on pure and applied mathematics. He died Feb. 7, 1892.

PECKHAM, RUFUS W.: jurist: 1838, Nov. — — — —; b. Albany, N. Y. His father, of the same name, was judge of the N. Y. court of appeals. He studied law in his father's office, and took a course at the Albany Acad. Admitted to the bar 1859, he became one of the firm of Peckham & Tremain. He was elected 1869 dist. atty., and also served by appointment as corporation counsel. In 1883 he was elected justice of the N. Y. supreme court, and in 1886 assoc. judge of the court of appeals. In 1895 he was appointed assoc. justice of the U. S. supreme court, in place of Howell E. Jackson, deceased, and was confirmed by the senate without opposition. His decisions have been characterized by vigor of thought and terseness and force of expression.

PECOPTERIS, n. *pě-kõp'tér-îs* [Gr. *pekõ*, I comb; *pteris*, a fern]: in *geol.*, an extensive genus of fossil ferns found in the coal measures, so named from the regular comb-like arrangement of the leaflets.

PECORA, *pěk'o-rá* [Lat. cattle]: Linnæan order of Mammalia, now generally called RUMINANTIA (q. v.).

PECOS, *pā'kõs*, RIVER: stream in Texas, rising in the mountains near Santa Fé, N. Mex.; running s.e. 600 m. through N. Mex. and Tex., and flowing into the Rio Grande-del-Norte, lat. about 29° 20' n., long. 102° west.

PECS: see FÜNFKIRCHEN.

PECTATE, n. *pěk'tât* [Gr. *pēktos*, coagulated, curdled]: a salt of *pectic acid*. PECTIC ACID, an acid obtained by a small addition of potash to pectin; an acid formed from pectin and a base (see FRUIT). PECTIN, n. *pěk'tîn*, the

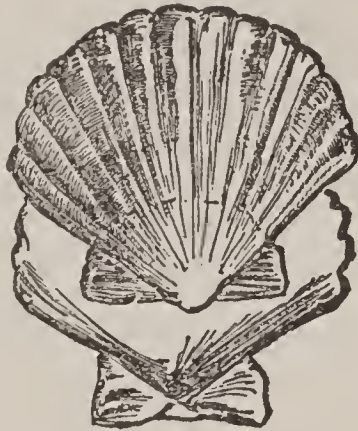


## PECTEN—PECTINIBRANCHIATA.

gelatinizing principle of fruits and vegetables; a substance resulting from the action of an acid, or a ferment, on pectose; by the action of a ferment with a gentle heat *pectin* is first transformed into *pectosic acid*, and afterward into *pectic acid* (see FRUIT). PECTOSE, n. *pěk-tōs'*, substance supposed to form the bulk of vegetable jelly, the elemental qualities of which may be equal to the starches (see FRUIT). PECTASE, n. *pěk'tās*, a substance present in the juices of plants.

PECTEN, n. *pěk'těn* [L. *pecten*, a comb]: genus of bivalves, commonly called clams (see below): vascular membrane in the eyes of birds. PECTINAL, a. *pěk'tin-āl*, pertaining to or resembling a comb. PECTINATE, a. *-āt*, or PECTINATED, a. *-ā-těd*, having a form resembling the teeth of a comb. PECTINATELY, ad. *-lě*. PECTINATION, n. *-ā'shŭn*, state of being pectinated. PECTINE'AL, a. *-ě'āl*, in *anat.*, applied to a line forming a sharp ridge on the pubic bone of the pelvis.

PECTEN, *pěk'těn*: genus of lamellibranchiate mollusks, commonly referred to the same family with the oyster (*Ostreadæ*); called sometimes *Pectinidæ*. The shell has neither teeth nor laminae in the hinge; the valves are unequal, one of them often much more convex than the other; the shape is regular; the hinge is extended by *ears*, and in most of the species both valves have ribs radiating from the umbo to the margin. Hence the name *pecten* [Lat. comb], from their appearance. The animal has a small foot; some of the species are capable of attaching themselves by a byssus; they are capable also of locomotion by opening and rapidly closing the valves, and in this way can even regain the sea from a short distance by leaping on the shore. Some of the larger species are often popularly called *clams*, a name shared by other bivalves. *P. Jacobæus*, native of the Mediterranean, is the SCALLOP-SHELL, which pilgrims were accustomed to wear in front of the hat, in token of their having visited the shrine of St. James at Compostella. It attains a size of about 4 inches long and 5 inches broad. Species are found in almost all parts of the world.



Pecten.

PECTIC ACID, PECTIN: see under PECTATE.

PECTINIBRANCHIATA, n. *pěk'tin-ě-brāng'kě-ā-tă* [L. *pecten*, a comb; Gr. *brang'chĭă*, gills]: order of gasteropodous mollusks, having the gills composed of numerous leaflets or fringes, arranged like the teeth of a comb, and affixed to the internal surface of a cavity which opens with a wide opening above the head. The sexes are distinct. All the P. have two tentacles and two eyes, the eyes often stalked. The mouth is produced into a proboscis, more or less lengthened. The eggs are deposited

## PECTOLITE—PECTOSE.

in a mass, with an envelope often of very remarkable and complicated form, which is produced by coagulation of a viscous albuminous matter secreted by a peculiar gland of the female. The P. are very numerous; the greater number of gasteropods being included in this order; some have a siphon, and some are destitute of it; some have spiral, and some have simply conical shells. Almost all are inhabitants of the sea or its shores; a few are found in fresh water. To this order belong Whelks, Periwinkles, Cones, Volutes, *Calyptraeae*, etc. PEC'TINIBRAN'CHIATE, a. -kĭ-ăt, having the gills in a comb like form. PECTIN'IFORM, a. -fawrm [L. *pecten*, a comb; *forma*, shape]: resembling a comb.

PECTOLITE, n. pĕk'tō-lĭt [Gr. *pektos*, compacted, curdled; *lithos*, a stone]: a zeolitic mineral consisting of silicate of lime and soda, crystals of a white or grayish-white color, and somewhat silky lustre, having a starlike arrangement of its crystals.

PECTORAL, a pĕk'tō-rāl [F. *pectoral*—from L. *pectoralis*—from *pectus*, a breast, *pectoris*, of the breast]: pertaining to a breast; good for the chest or lungs: N. a breast-plate, applied to that of the Jewish high-priest; a medicine to relieve complaints of the chest; one of the breast-fins of a fish. PECTORAL FINS, the two fore fins near the gills of a fish.

PECTORILOQUISM, n. pĕk'tō-rĭl'ō-kwĭzm [L. *pectus*, the breast; *pectoris*, of the breast; *loqui*, to speak]: the act of speaking from the chest. PEC'TORIL'OUY, n. -ō-kwĭ, in *med.*, the apparent issuing of the voice from that part of the chest to which the ear or stethoscope is applied; term of frequent occurrence in the history of chest diseases. If the stethoscope be applied to the chest of a healthy person, and he be requested to speak, the sounds of his voice will be conveyed to the ear of the observer with very different degrees of clearness, according to the part of the chest on which the base of the instrument rests. If, for example, it be applied at the top of the sternum or breast-bone the voice will reach the ear, through the tube, with considerable distinctness. For a short distance on either side of the sternum, just below the collar-bones, and in the arm-pits, the voice is still heard, but the sound is indistinct and confused. Below the third rib, and over the remainder of the chest, the voice produces only an obscure thrilling sound known as *pectoral resonance*. In certain morbid conditions the sounds of the voice seem to proceed with distinctness from the walls of the chest directly into the ear; and then, in place of the normal pectoral resonance, we have the physical sign known as Pectoriloquy [from the Latin *pectore*, from the chest, and *loquor*, I speak]. It occurs when a tolerably superficial excavation, of moderate or considerable size, lies under the stethoscope; and hence it was at one time regarded as an almost certain indication of advanced consumption, but it is now known that it may also occur when solidified masses of lung lie between a large bronchial tube and the part of the chest on which the instrument rests.

PECTOSE: see under PECTATE.

## PECULATE—PEDAGOGUE.

**PECULATE**, v. *pěk'ũ-lăt* [L. *peculātus*, an embezzlement of public money—from *peculium*, private property; *pecunia*, money; It. *peculato*; F. *péculat*, theft of public money]: to appropriate public money to one's own use; to defraud by embezzlement; to steal. **PECULATING**, imp. **PECULATED**, pp. **PECULA'TION**, n. *-lă'shŭn*, the applying to one's own private use of public money or goods. **PECULA'TOR**, n. *-tér*, one who embezzles public money.

**PECULIAR**, a. *pě-kũl'yér* [OF. *peculier*, peculiar, particular—from L. *peculĭāris*, one's own, belonging to one—from *peculĭŭm*, that which one has as his own: It. *peculiare*]: pertaining to one, not to many; one's own; appropriate; unusual; strange: N. exclusive property: in *Eng. law*, a particular parish or church having jurisdiction within itself, and exempted from the jurisdiction of the bishop of the district; about 300 'courts of peculiars' in such jurisdictions in England and Wales still exercise a jurisdiction, recently limited, but somewhat obscure as to its extent. **PECULIARLY**, ad. *-lĭ*, in a manner not common to others. **PECULIAR'ITY**, n. *-yăr'ĩ-tĭ*, something that belongs or is found in one person, thing, class, system, people, etc., and in no other. **PECULIARIZE**, v. *-yér-ĩz*, to appropriate; to make peculiar. **PECULIARIZING**, imp. **PECULIARIZED**, pp. *-izd*. **PECULIUM**, n. *-ũm*, in *anc. Rome*, the property which a slave might possess independent of his master. **COURT OF PECILIARS**, a branch of the court of arches.—**SYN.** of 'peculiar, a.': special; especial; particular; personal; private; individual; singular.

**PECULIAR PEOPLE**, n.: in *chh. hist.*, Protestant sect of recent origin, found mostly in Kent, England, and to a less extent in other counties round London. They recognize no sacraments or creeds, and claim to be the real exemplars of true and undefiled religion. They accept the exhortation of the Apostle James (v. 14, 15) in a strictly literal sense, and this has more than once led to a verdict of manslaughter being returned against some of their members by a coroner's jury. The name apparently has reference to I. Peter ii. 9.

**PECUNIARY**, a. *pě-kũ'nĭ-ă-rĭ* [F. *pecuniaire*, pecuniary—from L. *pecūniāriŭs*, of or belonging to money—from *pecūniā*, riches, wealth, originally property in cattle—from *pecus*, cattle: It. *pecuniario*, pecuniary]: relating to or consisting of money. **PECUNIARILY**, ad. *-ă-rĭ-lĭ*, as relating to or consisting in money. **PECUNIOUS**, a. *pě-kũ'nĭ-ŭs*, having abundance of money; wealthy.

**PEDAGOGUE**, n. *pěd'ă-gŏg* [F. *pédagogue*—from L. *pædagŏgŭs*; Gr. *paidagŏgos*, a slave who took children to school, and had charge of them at home—from Gr. *paida*, or *paida*, a child: *agŏ*, I lead; *agŏgŏs*, leading]: a schoolmaster—now used generally by way of contempt to designate a pedant; one whose occupation is to instruct young children. **PEDAGOGIC**, a. *pěd'ă-gŏj'ĭk*, or **PEDAGOG'ICAL**, a. *-ĭ-kăl*, pertaining to a teacher of children, or to the art of teaching. **PEDAGOGISM**, n. *-ĭzm*, the business and manners of a pedagogue; pedantry. **PEDAGOGY**, n. *-gŏj'ĭ*, preparatory discipline; ways or work of a pedantic teacher.

## PEDAL—PEDATIFID.

**PEDAL**, n. *pěd'ăl* [F. *pédale*—from L. *pedālis*, of or belonging to a foot—from L. *pedis*, of a foot: Gr. *podos*; Skr. *pāda*, a foot: It. *pedale*, a pedal]: any part of a musical instrument acted on by the feet. The pianoforte, the harp, and the organ are furnished with pedals, which, however, serve an entirely different purpose in each instrument. In the pianoforte, their use is to effect a change in the quality or intensity of the sound; the damper pedal prolongs the sound after the finger is lifted from the key, and the shifting or *una corda* pedal softens the tone. The pedals of the harp are the means by which the chromatic changes of intonation are effected. In the organ, the pedals are keys put in action by the feet. The division of the organ which is connected with the foot-keys is called the pedal-organ, and contains the largest pipes. The introduction of pedals in the organ is assigned to a German of the name of Bernhard, 15th c.; few organs now, except the smallest, are made without them. Pedals are used in the organ also to act on the swell and on stops: see ORGAN. **PEDAL**, a. pertaining to a foot; played or produced by the foot, as certain large pipes in an organ. **PEDAL NOTE**, a holding-note. **PEDAL-POINT**, or **PEDAL HARMONY** (see ORGAN-POINT, under ORGAN).

**PEDALIA'CEÆ**: see BIGNONIACEÆ.

**PEDALIER**, n. *pěd'a-lēr*: same as Pedalion, in music.

**PEDALION**, n. *pě-dā'li-on* [Gr. *pēdalion*, a rudder]: in *zool.*, a genus of Rotifera, family *Floscularidæ*.

**PEDALION**, n. *pě-dā'li-on* [L. *pedalis*, pertaining to the foot]: in *mus.*, a set of pedals acting upon strings, producing notes of a deep pitch, so constructed as to be capable of being used with a pianoforte.

**PEDANT**, n. *pěd'ănt* [F. *pédant*—from It. and Sp. *pedante*, a pedant]: one who makes a vain and ostentatious display of his learning. **PEDANTIC**, a. *pě-dăn'tik*, or **PEDAN'TICAL**, a. *-tĭ-kăl*, vainly displaying or making a show of knowledge. **PEDAN'TICALLY**, ad. *-lĭ*. **PEDANTRY**, n. *pěd'ăn-trĭ*, a vain and offensive display of knowledge. *Note.*—Said to be connected with L. *pedārē*, to foot it, to tramp about, as if a *pedant* was 'one who tramped about with children at his heels.' The word is most probably derived from Gr. *paideuō*, I instruct.

**PEDATE**, a. *pěd'ăt* [L. *pedātus*, footed—from *pedes*, feet]: in *bot.*, having divisions like the feet, an epithet applied to certain palmate leaves, as in hellebore.

**PEDATIFID**, a. *pě-dăt'ĭ-fĭd* [L. *pedātus*, footed; *findo*, I divide; *fĭdĭ*, I have divided]: in *bot.*, applied to a leaf whose parts are not entirely separate, but divided as a pedate one; irregularly lobed, said of a leaf. **PEDATINERVED**, a. *pě-dăt'ĭ-nĕrvd* [L. *nervus*, a nerve]: in *bot.*, having the veins of a leaf arranged in a pedate manner. **PEDATIPARTITE**, a. *pěd'ă-tĭ-păr'tĭt* [L. *partitus*, divided]: in *bot.*, having the venation of a leaf pedate, and the lobes almost free. **PEDATISECT**, a. *-ĭ-sĕkt* [L. *sectus*, cut or divided]: in *bot.*, applied to the veining of a leaf when it is pedatifid, and the lobes extend nearly to the midrib.

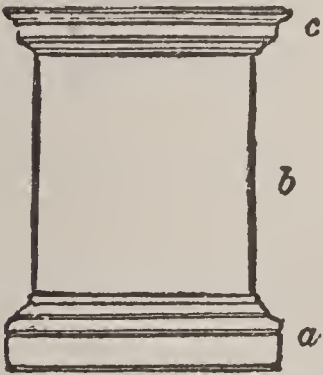
## PEDDLE—PEDETES.

**PEDDLE**, v. *pěd' dl* [prov. Eng. *ped*, pannier or wicker-basket; *pedder* or *pedlar*, one who carries on his back goods in a *ped* for sale, a packman]: to sell in a small way, as a pedler; to be busy about trifles; to engage as a pedler. **PED'DLING**, imp. travelling about selling small wares: **ADJ.** trifling; unimportant: **N.** the occupation of a pedler. **PED'DLED**, pp. *-dl'd*. **PED'LER**, or **PED'DLER**, or **PED'LAR**, n. *-lér*, one travelling the country, chiefly on foot, selling goods and small wares (see **HAWKER**). **PED'DLERY**, n. *-dlér-ì*, goods or small wares sold by pedlers. *Note.*—**PEDDER** is the Scot. for **PEDLER**: probably **PEDLER** is derived really from L. *pedis*, Gr. *podos*, of a foot, Skr. *páda*, a foot, thus meaning a merchant travelling on foot—*ped*, the OE. and Scot. for 'basket,' deriving its name from the fact of being carried by a *pedler*.

**PEDEE**, *pē-dē'*, **GREAT**: river of N. and S. C.; rising in the Alleghany Mts. in n. w. N. C., flowing s. by e. through e. S. C., and entering the Atlantic through Winyaw Bay at Georgetown. It is navigable to Cheraw, 150 m., and is about 350 m. long.—**LITTLE PEDEE**, its principal e. branch, is formed by the confluence of several smaller rivers in s. N. Carolina.

**PEDE-MAT**, n. *pědmăt* [L. *pēs* or *pědem*, a foot]: a mat for the feet; chiefly a sort of carpet in close proximity to the communion-table: also called a **PEDE CLOTH**.

**PEDESTAL**, n. *pěd'ēs tăl* [Sp. *pedestal*; F. *piédestal*—from It. *piédestallo*, a pedestal—from It. *piède*; L. *pes* or *pědem*, a foot; It. *stallo*, a standing, a permanent situation—from L. *sto*, I stand]: the base or substructure of a column or statue; a permanent base on which to place anything. The pedestal is much used in classic architecture. Like the column, it has a base, *a*, and a sort of capital or cornice, called the surbase, *c*. The shaft, or plain block, *b*, is called the dado or die.



Pedestal.

**PEDESTRIAN**, n. *pě-dēs'trì-ăn* [L. *pědestes*, on foot, pedestrian—from *pes* or *pědem*, a foot: It. *pedestre*: F. *pédestre*]: one who performs a journey on foot; one noted for his powers of walking; a professional walker: **ADJ.** performed on foot; walking. **PEDES'TRIAL**, a. *-ăl*, pertaining to the foot. **PEDES'TRIANISM**, n. *-ăn-izm*, the art or practice of walking; journeying or racing on foot.

**PEDETES**, *pē-dē'tēz*. or **HELAMYS**, *hěl'á-mīs*: genus of rodent quadrupeds of family *Muridæ*, allied to Jerboas, but differing from them in some characters of their dentition. The hind-legs, though very long, are not so long as in the jerboas. The tail is long. The **JUMPING HARE** (*P.* or *H. Capensis*) of s. Africa is about the size of a rabbit: it can jump 20 or 30 ft. at a bound. Its fore-feet also are very strong, and it burrows very expeditiously.

## PEDICEL—PEDICULARIS.

**PEDICEL**, n. *pĕd'ĭ-sĕl*, or **PEDICLE**, n. *pĕd'ĭ-kl* [F. *pédicule* or *pédicelle*—from L. *pedic'ulum*, a small foot-stalk— from *pĕdem*, a foot]: a small, short foot-stalk of a leaf, flower, or fruit; the foot-stalk or stem by which certain lower animals are attached. **PED'ICEL'ATE**, a. *-sĕl'lāt*, supported by a pedicel.

**PEDICELLARIÆ**, *pĕd-ĭ-sĕl-lā'rĭ-ē*: very remarkable minute appendages of the integuments of many of the Echinodermata; having the form of a stalk, with a small two-bladed or three-bladed forceps at its summit. They are of fleshy substance, with calcareous granules imbedded, and in a living state the blades are continually opening and closing. They were at one time supposed to be parasitic zoophytes, but are now generally believed to be organs of the star-fish or sea-urchin, though their use is merely conjectured to be that of keeping the surface of the echinoderm free of algæ and zoophytes. The introduction of a pin's point between the blades causes an immediate closing of them. They are found both on shelly and on comparatively soft integuments, and are always present, and always of a particular form, according to the species of echinoderm, and according to the particular place which they occupy, being crowded chiefly around the spines, and near the mouth of sea-urchins.



Lousewort (*Pedicularis palustris*):

*a*, corolla cut open, showing the stamens; *b*, fruit, *c*, pistil.

**PEDICULARIS**, *pĕ-dĭk-ŭ-lā'rĭs*: genus of herbaceous plants of nat. order *Scrophulariaceæ*, some of which have large and finely-colored flowers. Two species, *P. palustris*

## PEDIFORM—PEDIGREE.

and *P. sylvatica*, natives of Britain, common in wet grounds, have received the name of Lousewort, English equivalent of 'pedicularis,' from their supposed influence in producing the lousy disease in sheep; an influence purely imaginary. Their acridity renders them injurious to sheep which eat them. Continental Europe and Asia produce many other species, and some are found in N. America. *P. sceptrum*, or King Charles's Sceptre, is a principal ornament of marshy grounds in the most northern countries of Europe.

**PEDIFORM**, a. *pěd'í faorm* [L. *pědem* a foot; *forma*, shape]: shaped like a foot.

**PEDIGEROUS**, a. *pě-díj'ěr-ůs* [L. *pědem*, a foot; *gero*, I carry or bear]: having feet; furnished with footlike organs.

**PEDIGREE**, n. *pěd'í grě* [OE. *pedigru* and *petegreu*, also *pe-de-gre*, a line of kindred; prob. from L. *pes* or *pedem*, foot]: list or register containing the line of ancestors from which a person or family is descended; genealogy; lineage; the same list made more full, and often representing, in tabular form, the relations in which the members of a family stand to each other, accompanied or unaccompanied by a notice of the chief events in the life of each, with their dates, and the evidence of the facts stated. *Note*.—Wedgwood gives F. *pied* in the sense of tree, so that *pied-de gres* would thus signify a tree of degrees. Skeat's derivation from F. *pied-de-grue*, crane's foot, the heraldic tree being generally crooked, seems improbable.—Pedigrees are indispensable aids to the student of history. The wars of the Roses, the claim of Edward III. to the crown of France, the relative position of Mary and Lady Jane Grey, the circumstances which brought about the union of the crowns of England and Scotland, the Slesvig-Holstein question, which occupied the attention of all Europe, and many other familiar chapters in the history of nations, as well as of families, cannot be read aright without the aid of pedigrees. The materials for formation of a P. are notes of the facts to be set forth, and a recognized series of signs and abbreviations. These notes comprise the name of every person who is to appear in the P., with dates and circumstances desirable for record. Among the commonest abbreviations are *dau.*, for daughter of; *s.* and *h.*, son and heir of; *coh.*, coheir of; *w.*, wife of; *sp.* (*s'ine prole*), without issue; *v. p.* (*vitâ patris*), in his father's lifetime; *b.*, born; *d.*, died; *dep.*, deposed; *K.*, king; *E.*, earl, etc. The sign = placed between two names, indicates that they were husband and wife; a downward pointing arrow under a name signifies that the person had children. All persons of the same generation are to be kept in the same horizontal line; and the main line of descent is, wherever possible, to be indicated by keeping the successive names in a vertical column. Continuous lines indicate the succession of the different generations. The members of the same family in one generation are arranged usually in their order of birth in two groups—sons first, then daugh-

## PEDILUVIUM.

ters; but where the same father or mother has children by more than one marriage, the children of each marriage ought to form distinct groups. The actual arrangement, however, of a P. must always depend on the leading object which it is intended to illustrate.

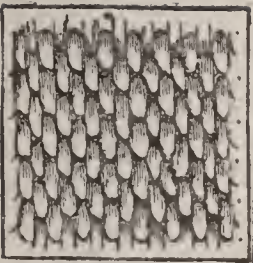
Tabular genealogies, generally brief, and meant to illustrate some particular claim of right, are found among the records, public and private, of the early middle ages; but after the incorporation of the English Heralds' College, far more attention was given to the compilation of pedigrees of families, with reference particularly to their claims to dignities and heraldic insignia. In the 16th c., the heralds obtained copies of all such accounts of the English families of any distinction as could be supplied to them, and entered them in the books which contain their official records. Royal commissions were issued under the Great Seal to the two provincial kings-of-arms, empowering them to visit in turn the several counties of England, in order to collect from the principal persons of each county an account of the changes in their respective families in the interval since the last preceding visitation, and to inquire what account could be given of themselves by families who had stepped into the rank of gentry, or had become settled in the county since that period. The register-books kept by the heralds and their assistants contain the pedigrees and arms collected in the course of the visitations, with the signatures of the heads of the families. The pedigrees thus collected contain a vast body of information, interesting not only to the professed genealogist, but to every one who would know anything of the distinguished characters in English history. Some of these books are lost, the rest are scattered among the public and private libraries of the country, the largest collections being in the archives of the College of Arms and the British Museum. After the beginning of the 18th c., the visitations were discontinued, and there has since been no official and regular collection of pedigrees. Persons frequently record their pedigrees for preservation in the Register of the College of Arms. This register is quite distinct from the heraldic department of that institution, and is open to any one who wishes to preserve evidence of any properly authenticated facts regarding his descent and family. PEDIGREE, in law, is the legal relationship between individuals which is looked to with regard to the descent of property and honors. See **INTESTACY: NEXT OF KIN: SUCCESSION.**

**PEDILUVIUM**, n. *pěd'v-ló'vĭ-ĭm* [L. *pēs* or *pēdem*, a foot; *luo*, I wash]: a foot-bath; the bathing of the feet.





Peach (*Amygdalus Persica*).



Pearl-stitch.



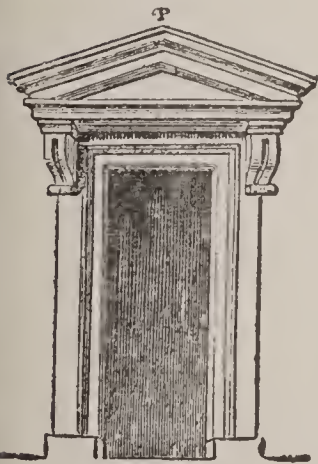
Pecan (*Carya olivæformis*.)



Pectinibranchiata.—*Ianthina fragilis*, a, Pectinated branchiæ.



Pediment.



P, Pediment.



Pedipalpi.—Scorpion *afer*; 2, Pedate Leaf.—*Hel Phrynus reniformis*; 3, *Galeodes leborus foetidus*.  
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## PEDIMENT—PEDOTROPHY.

**PEDIMENT**, n. *pěd'ĩ-měnt* [unascertained: Skeat suggests a supposed L. *pedamentum*, a stake or prop—from *pedāre*, to furnish with feet, to prop]: space filled with stone over the portico at the ends of the roof of classic buildings. It is inclosed below by the horizontal cornice and above by the *raking* cornice, the latter following the slopes of the roof. The P. may be called the gable of classic buildings. It is frequently enriched with sculpture, for which it forms a fine setting. The doors and windows of classic buildings are often surmounted by pediments, either straight-sided or curved. The term may denote also the finishing stone of the front elevation of a building; similar crowning ornament of a piece of furniture, etc.

**PEDIPALPOUS**, a. *pěd'ĩ-pāl'pūs* [L. *pēs* or *pēdem*, a foot; *palpo*. I feel; *palpi*, feelers]: applied to certain arachnida having feelers in the form of pincers, or armed with two claws, as the scorpions—the order is called **PED'IPALPS**, *-pālps*, or **PED'IPAL'PI**, n. plu. *-pāl'pī*.

**PEDLAR**, or **PEDLER**, n. *pěd'lér*: see **PEDDLE** and **PEDLER**.

**PEDO-**, prefix *pě-dō-* [Gr. *pais*, gen. *paidos*, a boy, a child]: relating to or connected with children.

**PEDOBAPTISM**, n. *pě-dō-bāp'tizm* [Gr. *pais* or *paida*, a child; *baptismos*, baptism]: the baptism of infants or of children. **PE'DOBAP'TIST**, n. *-bāp'tist*, one who holds the Scriptural character of infant baptism: see **BAPTISM**, **INFANT**.

**PEDOMANCY**, n. *pěd'ō-mān'sĩ* [L. *pēs* or *pēdem*, a foot; Gr. *manteia*, divination]: divination from the examination of the lines of the soles of the feet.

**PEDOMETER**, n. *pě-dōm'ě-tér* [L. *pēs* or *pēdem*, a foot; Gr. *metron*, a measure]: instrument worn in the pocket, by which the distance passed over in a given time by a pedestrian is ascertained: it sometimes has a watch or clock attached; and it is in the form of a watch with a dial-plate marked for miles and fractions of miles. Each step, causing by its movement the fall of a hanging weight, registers itself by the movement of the hands on the dial. The weight, forced back by a delicate spring to a horizontal position, is released by each step. After a measured mile or other known distance has been walked, and the resulting indication on the dial observed, the instrument can be set accordingly to correspond with the average pace. The P. gives an approximate measurement, but cannot be depended on for accuracy. See **ODOMETER**. **PED'OMETRICAL**, a. *-r'ĩ-kāl*, pertaining to or determined by a pedometer.

**PEDONOSOLOGY**, n. *pě-dō-nō-sōl'o-jĩ* [prefix *pedo-*; Gr. *nosos*, disease; *logos*, discourse]: study of the diseases of children or infants.

**PEDOTROPHY**, n. *pě-dōt'ro-f'ĩ*, or **PEDOTROPHIA**, n. *pě-dō-trōf'ĩ-a* [Gr. *pais*, *paidos*, a child; *trephō*, I rear]: that branch of hygiene which deals with the nourishment of infants and children.

## PEDRO I.—PEDRO II.

PEDRO I., King of Castile and Leon: see PETER THE CRUEL.

PEDRO, *pēdro* or *pādro*, I. (Dom PEDRO DE ALCANTARA), Emperor of Brazil: 1798, Oct. 12—1834, Sep. 24 (reigned 1822—31); b. Lisbon, Portugal; second son of John VI., King of Portugal. On the death of his elder brother 1801, he became Prince of Beja, and heir to the throne; and after his father's accession to the throne of Portugal and Brazil 1816, he received the title Prince of Brazil. He was carried with the royal family of Portugal in their flight to Brazil 1807, and from that time remained in that country. In 1817 he married Archduchess Leopoldine of Austria, and on his father's return to Lisbon, 1821, was named regent of Brazil. The Brazilians had become greatly disgusted with the illiberal methods of Portuguese rule. P., though arbitrarily ordered to return at once to Portugal for completion of his education, cast in his lot with the Brazilians, despite threats of exclusion from the throne of Portugal, and was chosen emperor of Brazil. His government was vigorous, but a war which broke out between his supporters and the advocates of republicanism distracted the country. In 1826 he succeeded to the throne of Portugal; and the Brazilian discontent was renewed in the prospect that Brazil would be again reduced to a dependent state. P.'s hasty temper led him to measures which increased the discontent. But he retained the dignity of king of Portugal only long enough to show his right to it, and, after granting a more liberal constitution, immediately resigned in favor of his daughter Maria II. The disturbances in Brazil still increased, the finances fell into disorder, the emperor's second marriage with Princess Amelia of Leuchtenburg displeased his subjects, and, after various ineffectual attempts to restore tranquillity, he was compelled, by the revolution of 1831, July, to resign the throne in favor of his son Pedro II. (q.v.), a boy 5½ years old. P. then sailed for Portugal, where his brother Miguel had usurped the throne; and with the aid of an army swelled by French and English volunteers, after a three years' campaign, he drove away the usurper, and restored his daughter to the throne. But ceaseless excitement and struggle had produced exhaustion, which ended in his death. See BRAZIL: MIGUEL, Dom: PEDRO II. (Dom PEDRO DE ALCANTARA): PORTUGAL.

PEDRO II. (Dom PEDRO DE ALCANTARA), ex-Emperor of Brazil: born Rio Janeiro, 1825, Dec. 2 (reigned 1841—89); died 1891, Dec. 5; son of Pedro I. On his father's abdication, he became sovereign under the regency of Andrada, democratic leader; two years later, under a council of regency; at the age of 16 was crowned emperor; at 18 married Princess Theresa, dau. of Francis I., King of the Sicilies. The Amazon river was made free to all nations 1867. Journeys were made by P. to Europe 1871—2, to the United States, Europe, Pal-

## PEDUNCLE—PEEBLESSHIRE.

estine, and Egypt 1876-7, and to Europe for his health 1887-8. The sale of slaves was prohibited by decree 1850; a bill for immediate abolition was enacted 1888, May 13, emancipating 600,000 to 700,000 slaves. An attempt on Dom Pedro's life was made 1889, by a Portuguese. 1889, Nov. 15, while at Petropolis, he was informed of the revolution at Rio Janeiro. Returning thither, to his besieged palace, he was notified by the military leader, Gen. da Fonseca, of the decision that he must leave the country; and he accepted the banishment, but, with his family, was hurried on board ship at night by the revolutionists, arriving at Portugal Dec. 7. He remained in Europe, in failing health, dying two years later. A republic was proclaimed in Brazil. The revolution is attributed in part to disaffection of former slaveholders, but more to that of the army, in view of the apprehended substitution of a national guard—the army conspiring with the republican leagues that opposed the centralizing policy of the empire. There were provincial legislatures, but the emperor could veto their acts, had the appointment of governors, judges, and magistrates, and could fill every fourth senatorial vacancy. The council of state had life-tenure, and was made up from the relatives or partizans of the emperor. The heir-apparent, Princess Isabel, and her husband, Count d'Eu (Prince Louis Philippe d'Orleans), were very unpopular. The ex-emp. was a man of noble presence and character, highly cultivated, interested especially in science, and always promoted internal improvements and the education and welfare of all classes in his empire. His wife and two daughters were reported as personally charming, and, like himself, gracious and unaffected, except that Isabel (princess regent during the absence of her father 1887-8) was said to have been imperious in her administration, and her husband was especially disliked by the people.

**PEDUNCLE**, n. *pě-dŭng'kl* [mid. L. *pedun'culus*, a little foot, a foot-stalk—from *pēs* or *pēdem*, a foot: F. *pédoncule*, a peduncle]: stem or stalk which supports one flower or fruit, or several (see FLOWER): stems by which shells are attached to other objects. **PEDUN'ULAR**, a. *-kū-lēr*, pert. to a peduncle, or growing from one. **PEDUN'ULATE**, a. *-kū-lāt*, or **PEDUN'ULATED**, a. *-lā-tèd*, having a peduncle; growing on a peduncle.

**PEE'BLES**: see **PEEBLESSHIRE**.

**PEEBLESSHIRE**, *pē'bl-shēr*: small county in s. Scotland, called also **TWEEDDALE**, from consisting mainly of the upper valley of the Tweed, which rises in the county. P. is bounded by Dumfries and Selkirk shires on the s., Lanarkshire on the w., Mid-Lothian on the n., and Selkirkshire on the e.; 356 sq. m., or 227,869 statute acres. Its lowest point above sea-level is about 450 ft., from which to 1200 ft. is the region of cultivation; but the county, being a group of hills, is mostly pastoral, with the arable lands chiefly in the valleys. The highest hill is

## PEEKSKILL—PEEL.

Broad Law, 2,761 ft. Within the county, the Tweed has for tributaries the small rivers Eddleston, Leithen, Quair, Manor, and Lyne, besides many mountain rivulets. P. comprehends 16 parishes, with 14 parish churches. The only town is Peebles, the co. seat, an anc. royal burgh, 22 m. from Edinburgh, pleasantly situated on a peninsula, at the confluence of the Eddleston with the Tweed; pop. (1891) 5,621. William Chambers, 1859, made a free gift to this his native town of a suite of buildings, comprising a reading-room, public library of 15,000 vols., museum, gallery of art, and hall for lectures and concerts. In 1880-1, the valued rental of the county, town included (exclusive of railway property, £19,668), was £132,081. P. abounds in remains of British hill-forts, border towers, and other antiquities; and has numerous modern mansions.—See *History of Peeblesshire*, by W. Chambers (1 vol. 8vo, 1864), with maps and wood-engravings. Pop. (1891) 14,647; (1901) 15,066.

**PEEKSKILL**, *pēks'kīl*: village in Cortland tp., Westchester co., N. Y.; on the New York Central and Hudson River railroad, and the e. bank of the Hudson river; 43 m. above New York, 17 m. below Newburg. There is a steam-ferry across the river to Caldwell's Landing, and in summer a line of steamers runs to New York. The village occupies an elevated site, and the river scenery is said to be equal to that of the Rhine. There are several churches, one of which dates from 1767; good schools, and several institutions of higher learning; 3 weekly newspapers, a national bank (cap. \$100,000), and a savings-bank. Water is supplied from a reservoir more than 350 ft. above the river. Iron-manufacturing is extensively carried on; and leather, fire-brick, and agricultural implements are made. P. was settled at an early period, was part of the Cortland manor, and was an important point in the revolution. A fire department was organized 1827. The village was incorporated 1839. Pop. (1880) 6,893; (1890) 9,676; (1900) 10,358.

**PEEL**, n. *pēl* [OF. *pcl*, skin; F. *peau*; *peler*, to pare or bark—from L. *pellem*, skin: Dut. *pelle*, skin; *pelten*, to skin, to peel: Dan. *pille*, to pick or strip]: the skin or rind of a fruit; the thin bark of a stick: V. to strip from fruit, etc., the skin, bark, or rind; to pare; to lose the skin or bark; to come off, as the skin. **PEEL'ING**, imp. **PEELED**, pp. *pēld*. **PEELER**, n. *pēl'ēr*, one who peels.

**PEEL**, n. *pēl* [F. *pelle*, a shovel, a peel for an oven—from It. *pala*, a shovel—from L. *pāla*, a shovel, a peel]: a flat wooden shovel for an oven; an instr. used in a printing-office for hanging up printed sheets to dry.

**PEEL**, v. *pēl* [F. *piller*, to pillage]: in *OE.*, to pillage; another spelling of *OE.* *pill*, to rob.

## PEEL.

PEEL, n. *pēl* [W. *pill*, a stake, a fortress]: in *Scot.*, a small fortress. PEEL-TOWER, one of the towers erected on the Scottish borders for defense. They are square, with turrets at the angles, and the door is sometimes at a height from the ground. The lower story is usually vaulted, and formed a stable for horses, cattle, etc. For an account of these old towers, now mostly in ruin, see *History of Peeblesshire*, by W. Chambers, 1864.

PEEL, *pēl*: small, populous, and thriving seaport town on the w. coast of the Isle of Man. It was formerly called 'Holm,' and was a place of importance in the island. The herring-fishery, the building of small vessels, and the manufacture of nets are carried on. The bay is spacious, and abounds with fish. At its n. extremity are several grotesque and romantic caverns. The s. extremity is formed by Peel Island, on which stand the grand old ruins of Peel Castle and St. German's Cathedral. The castle was formerly the frequent residence of the Earls of Derby, then Lords of the Isle of Man, and is expressly named in the original grant of Henry IV. to the Stanley family. Beneath the cathedral is a strong subterranean dungeon, where many noble persons were in former days imprisoned, including Thomas, Earl of Warwick, in the time of Richard II., and Elinor Cobham, Duchess of Gloucester, who was sentenced to perpetual imprisonment in it 1440, and died within its gloomy recesses. In Sir Walter Scott's *Peveril of the Peak*, constant mention is made of this castle, and indeed it may be said to be the scene of the story. The ruins are yearly visited and admired by thousands of persons. Pop. (1871) 3,513; (1881) 4,360.

PEEL, Sir ROBERT: British statesman: 1788, Feb. 5—1850, July 2; b. near Bury, in Lancashire; son of Sir Robert P. (created baronet 1800), wealthy cotton-spinner, from whom he inherited a great fortune. P. was educated at Harrow, and at Christ-Church, Oxford, where he graduated B.A. 1808, taking a double first-class; and entered the house of commons 1809 as member for Cashel, adopting the strong tory politics of his father. Percival was then prime minister. P. set quietly about the business-work of the house, feeling his way with that steady prudence and persevering diligence that were conspicuous in his character. In 1811 he was appointed under-sec. for the colonies; and 1812-18 he held the office of sec. for Ireland, showing a strong anti Rom.-Catholic spirit (whence the witty Irish gave him the nickname 'Orange-Peel'). This occasioned so ferocious an attack by O'Connell that even the cool and cautious secretary was driven to send the agitator a challenge. The police, however, prevented the duel. 1818-22 P. remained out of office, but not out of parliament, where he sat for the Univ. of Oxford. He now began to acquire reputation as financier and economist. He was still averse to religious or political reform. No member of the Liverpool-Castlereagh cabinet



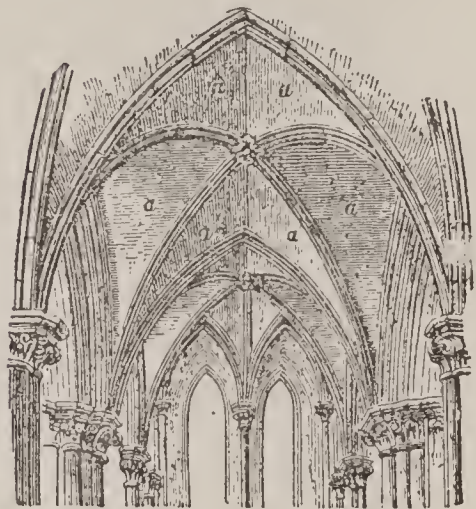
a, Peduncle; bb,  
Pedicle.



Peel-tower, Gilnockie, Dum-  
friesshire.



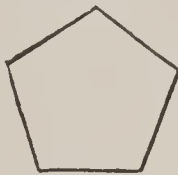
Pentamera.—*Pelicism cyanipes*:  
a, Tarsus magnified.



Pendentive Roof, Salisbury  
Cathedral.—a,a,a, Pendentives.



Pent-roof.



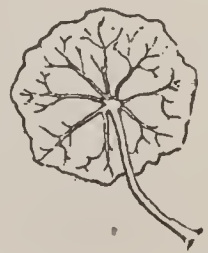
Pentagon.



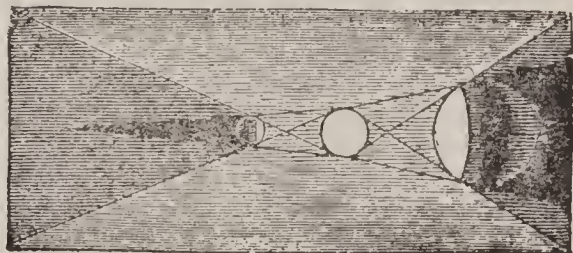
Pentandria.—*Hottonia  
palustris*.



Peltæ.



Peltate Leaf.



Umbra and Penumbra.

## PEEL.

could have been to appearance more resolute. He even vehemently defended the infamous 'Peterloo Massacre' of 1819. In 1822 he re-entered the ministry as home sec.—Canning shortly afterward becoming foreign sec., on the suicide of Lord Castlereagh. The two worked well together for some time, as P. applied himself to financial matters, especially to the currency; but 'Roman Catholic emancipation' was a question on which Canning was considerably in advance of his brother-secretary, and when Canning was called by the king, after the resignation of Lord Liverpool, to form a sort of whig-tory ministry, P., with the Duke of Wellington and others, withdrew from office. Yet it is singularly characteristic of this most honest and *compromising* statesman that, even when he seceded (1827), his opinions were veering round to the liberal and generous view of the claims of Rom. Catholics; and when the death of Canning, shortly afterward, led to the formation of the Wellington-Peel govt., its great measure—actually introduced by 'Orange-Peel' himself—was the ever-memorable one for the 'relief' of the Rom. Catholics (1829). As home sec., he signalized himself by reorganization of the London police force—since popularly called 'Peelers' and 'Bobbies,' their previous sobriquet being 'Charlies'—from King Charles I., who (1640) extended and improved the police system.

Meanwhile, the Univ. of Oxford had rejected its apostate representative. Then arose the great question of parliamentary reform, which P. firmly but temperately opposed. In 1830 the Wellington-Peel ministry fell, and was succeeded by a whig ministry under Earl Grey, which, 1832, carried the Reform Bill. P. (now Sir Robert P., by the death of his father), when he saw that reform was inevitable, accepted defeat and its results with equanimity. He shrank from factious opposition to the measure, and contented himself with presenting as forcibly as he could the political *per-contra*, seeking by keen and vigilant criticism to retard the too rapid strides of liberalism. He became leader of the 'conservative' opposition. In 1833, when the first 'reformed' parliament assembled, P. took his seat as member for Tamworth, which he represented till the close of his life. On the retirement of the Melbourne ministry, 1834, Nov., he accepted the office of prime minister, but could not give stability to his administration, and was compelled again to give place to Viscount Melbourne 1835, Apr., and resumed his place as leader of the opposition. P.'s conduct in opposition was always patriotic. The whigs, pressed on one side by the new radical party and the Anti-Corn-Law League, and on the other by O'Connell and the Irish repealers, gradually lost ground, and, being narrowly defeated 1841 on a motion of want of confidence, dissolved parliament. The general election that ensued was virtually a contest between Free Trade and Protection. Protection won; and when the new parliament met, a vote of no confi-



## PEEL.

dence was carried by a majority of 91. The conservative party, headed by P., now came into office. The great feature of the new govt. was its attitude on the corn-law question. The whigs, while in office, and even after their expulsion, were bent on a fixed but moderate duty on foreign corn; the Anti-Corn-Law League would hear of nothing short of entire repeal; while Sir Robert was in favor of a modification of the sliding scale of duty which had existed since 1828. He introduced and carried (1842), in spite of strong opposition, a measure based on this principle. The deficit in the revenue, which had become quite alarming under the Melbourne administration, next engaged his attention, and led him to bring in a bill (1842) for the imposition of an 'income tax' of 7*d.* in the pound, to be levied for three years. To alleviate the new burden, P. commenced a revision of the general tariff, and either abolished or lowered the duties on several very important articles of commerce, such as drugs, dyewoods, cattle, sheep, pigs, salted meat, butter, eggs, cheese, and lard. He also showed himself resolute in repression of the turbulent malcontents of Ireland. O'Connell (q.v.) was tried for conspiracy, and, though the judgment against him was set aside on appeal to the house of lords, the influence of the 'agitator' was broken. The first half of 1845 was marked by the allowance to Maynooth being increased and changed into a permanent endowment instead of an annual grant, and by the foundation of the Irish unsectarian colleges, and other important measures. But the potato-rot in Ireland during the autumn, followed by a frightful famine, rendered 'cheap corn' a necessity, if millions were not to starve. Cobden and the League redoubled their exertions. Lord John Russell announced the views of the whig party on the crisis, and Peel again yielded. He told his ministerial colleagues that the corn laws were doomed, and that their repeal was inevitable. Some of them refusing to go with him, he resigned; but, after a few days, was recalled, and resumed office. Lord Stanley, the late Lord Derby, seceded, and with Lord George Bentinck, Mr. Disraeli, etc., formed a 'no-surrender' tory party; but the Duke of Wellington, Graham, Aberdeen, Gladstone, and other eminent conservatives, stood by Peel, and the measure for the repeal was carried. He was, however, immediately afterward defeated on an Irish Protection of Life Bill. Not so much on this account, as because he felt that the course which he had pursued had produced a dissolution of the old ties of party, and that he could not expect for some time to find himself at the head of a strong govt., P. retired from office 1846, June, giving place to a whig administration under Lord John Russell, to which he gave an independent but general support as the leader of a middle party rather whig than tory. In the critical times of 1847-8, he was one of the most important props of the govt., whose free-trade principles he had now completely accepted.

## PEEP-PEEPUL.

His ecclesiastical policy also had undergone a remarkable change, and he now frankly supported the whigs in efforts to carry an act for repeal of Jewish disabilities. He was regarded by the working and middle classes generally with grateful respect. An unexpected catastrophe put an end to his career: 1850, June 28, he had spoken with great eloquence in the debate on Lord Palmerston's Greek policy; but on the following day was thrown from his horse in Hyde Park, and was so much injured that he died on the evening of July 2.—He left five sons, the eldest of whom, Sir ROBERT P., and the second, Sir FREDERICK P., have held office as ministers.—ARTHUR WELLESLEY P., the youngest son, graduated at Oxford 1852, was elected to parliament as a liberal, from Warwick, 1865, and became speaker of the house of commons 1884.

PEEP, n. *pēp* [Dut. *piepen*, to chirp, to squeak: OF. *pepier*, to peep, to pule: L. *pipirē*, to peep or cheep like a chicken through the shell—hence to begin to appear: Dan. *at pippe frem*, to shoot or peep forth, as a bud or seed does: an imitative word]: a beginning to appear, as of daylight; a look through a crevice or small opening; a sly look; the cry of a chicken: V. to cry in a small voice, as a chicken; to chirp; to look slyly or curiously; to look as through a crevice or from a hiding-place; to begin to appear. PEEP'ING, imp.: PEEPED, pp. *pēpt*. PEEP'ER, n. *-ēr*, one who peeps. PEEP-HOLE, or PEEPING HOLE, a hole or small opening through which one may look without being discovered. PEEP OF DAY, the first streaks of light in early morning piercing through the shades of night. *Note*.—Skeat prefers the derivation from OF. *piper*, to peep out, to pry; *piper* may be referred to the fowler who whistles or chirps like a bird in order to deceive—thus he *pipes* and *peeps* out at once; hence *peep* implies 'to look out slyly,' so as not to be seen.

PEEPUL, *pē'pūl*, or PIPUL, or PIPPUL, *pīp'ūl* (*Ficus religiosa*); known also as the SACRED FIG of India, and in Ceylon as the BO-TREE: species of Fig (q. v.), somewhat resembling the Banyan, but the branches not rooting like those of that tree, and the leaves heart-shaped, with long, attenuated points. The tree is held sacred by the Hindus, because Vishnu is said to have been born under it. It is held sacred by the Buddhists also. It attains great size and age. The juice contains caoutchouc, and is used by women as bandoline. Lac insects feed on this tree, and much lac is obtained from it. The fruit is not much larger than a grape, and, though eatable, is not valued. See BO-TREE.

## PEER—PEEWIT.

**PEER**, *v.* *pēr* [Norm. F. *parer*; OF. *paroir*, to appear—from L. *parēre*, to peep out or appear, as the sun over a mountain: also Low Ger. *piren*, to look with half-shut eyes]: to come just in sight; to appear; to look narrowly; to peep. **PEER'ING**, *imp.*: **ADJ.** prying. **PEERED**, *pp.* *pērd.* *Note.*—**PEER** here has a double origin assigned to it, but the confusion resulting therefrom cannot now be unravelled; in the sense 'to come just in sight,' *peer* may be nothing more than an abbreviation of 'appear.'

**PEER**, *n.* *pēr* [OF. *per* or *peer*; F. *pair*, a peer, a match—from L. *par*, equal]: a match; an equal; one of the same social rank; a nobleman; a member of the house of lords; general name applied to the titled nobility of Great Britain and Ireland, indicating their equality of rank. The peerage includes the various degrees of Baron, Viscount, Earl, Marquis, and Duke. The peers of England, of Great Britain, of the United Kingdom, and certain representative peers of Scotland and Ireland, together with certain of the bishops and archbishops, who are called lords spiritual, constitute the house of lords. The dignity of the peerage is hereditary, but in early times was territorial. Life-peerages seem at one time to have been known in England; but in 1856 Sir James Parke, having been created by Queen Victoria Baron Wensleydale 'for and during the term of his natural life,' the house of lords, on the report of a committee of privileges, held that he was not entitled to sit and vote in parliament. Ladies may be peeresses in their own right either by creation or by inheritance: the wives of peers also are styled peeresses. For notices of each order, and of the whole body, see **NOBILITY: PARLIAMENT: DUKE: MARQUIS: EARL: VISCOUNT: BARON.**

A certain limited number of the French nobility were styled Peers of France. **PEER'AGE**, *n.* *-āj*, the body of peers; the rank or dignity of a peer. **PEER'ESS**, *n. fem.* *-ēs*, the wife of a peer; a noble lady. **PEERLESS**, *a.* *-lēś*, without an equal. **PEER'LESSLY**, *ad.* *-lī.* **PEER'LESSNESS**, *n.* *-nēs*, the state of being peerless.

**PEEVISH**, *a.* *pēv'ish* [prov. Dan. *piève*, to whimper, to cry like a child: Gael. *piob*, to pipe, to squeak: probably of onomatopoetic origin]: cross or ill-tempered; fretful; apt to mutter and complain; hard to please; in *OE.*, childish; thoughtless; froward. **PEEV'ISHLY**, *ad.* *-lī.* **PEEV'ISHNESS**, *n.* *-nēs*, the quality of being peevish; sourness of temper; fretfulness.—**SYN.** of 'peevish': querulous; petulant; cross; discontented; waspish; ill-grained; ill-tempered; fretful; ill-natured; testy; spleeny; irritable; captious; irascible; perverse; morose.

**PEEWIT**, or **PEWIT**, *n.* *pē-wīt'* [Scot. *pee-weip*; Dut. *kievit*—a word imitative of its cry]: the lapwing or tufted plover: see **LAPWING**: see also **PEWEE**.

## PEG—PEGASUS.

PEG, n. *pěg* [Dan. *pukke*, to stamp, to pound : comp. L. *pango*, I fix] : small, pointed chip of wood used as a pin or nail ; one of the movable pins of an instrument, by which the strings are strained. *Shoe-pegs* are small, square-pointed strips of wood (chiefly maple) used to connect the parts of the sole and upper leather without sewing—an Amer. invention, introduced throughout Europe : see SHOE. PEG, v. to fasten with pegs. PEG'-GING, imp. PEGGED, pp. *pěgd* : ADJ. fastened with pegs. PEG'GER, n. -*ér*, one who pegs. TO TAKE A PEG LOWER, to depress or sink : see PEG 2. PEGGED BOOTS, boots with wooden or iron pegs fastening the soles, instead of stitching. PEG TOP, a child's plaything for spinning, made of wood. TO PEG AWAY, to continue at with small but never-ceasing efforts.

PEG [see PEG 1] : a slang term meaning 'a glass of brandy and soda-water,' derived from the old liquor-tankards, which were pegged up or down with pegs, to indicate the quantity of liquor contained, more or less ; hence, *to take down a peg* is to lower the arrogance or conceit of a person in some significant way. *Note.*—The origin of this is referred also to the lowering or raising of a ship's colors by pegs for the retaining-line.

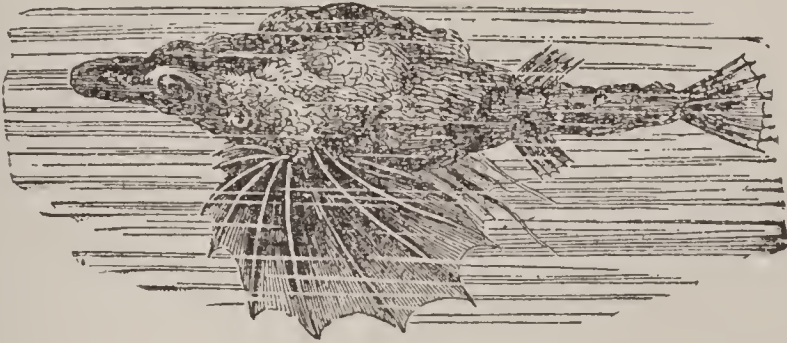
PEGANUM, *pě'găn-ŭm* : genus of plants of nat. order *Zygophyllaceæ*, of which the only known species is *P. harmala*, half-shrubby plant with linear, smooth, almost bipinnatifid leaves and solitary, white, axillary flowers, native of the Levant and n. India, sometimes cultivated in gardens under the name SYRIAN RUE. The seeds are narcotic, and Emperor Solyman is said to have kept himself intoxicated by eating them. They were used formerly in medicine in Europe, and still are in the East. The Turks use them as a spice, also for dyeing red. The plant is believed to be the *Harmala* of the Greeks, mentioned by Dioscorides as one of the kinds of *Peganon*.

PEGASSE, or PACASSE (*Bos pegasus*) : species of ox, native of the interior of w. Africa. The head is short and thick ; the forehead wide ; the horns long, extending laterally from the frontal ridge, then turning downward, and again upward ; the ears very large and pendulous ; the neck maned ; the tail entirely covered with long hair ; the legs long. Little is yet known of this curious species of a most important tribe.

PEG'ASUS : genus of fishes, constituting the family *Pegasidæ*, of order *Lophobranchii* (q.v.). The species are few ; they are small fishes, natives of the Indian seas, interesting from their peculiar form and appearance. The breast is greatly expanded, much broader than high, the gill-openings in the sides ; the pectoral fins are extremely large and strong ; a long snout projects before the eyes, and the mouth is under and at the base of it ; the body is surrounded by three knobbed or spinous rings.

## PEGASUS—PEGMATITE.

One species (*P. draco*) is called SEA DRAGON, another (*P. volans*) is popularly known as PEGASUS.



Sea Dragon (*Pegasus draco*).

PEGASUS, n. *pěg'ă-sūs*, in Greek Mythology: a winged horse which arose with Chrysaor from the blood of the Gorgon Medusa, when she was slain by Perseus; said to have been named from having made his appearance first beside the springs (*pěgai*) of Oceanus. He afterward ascended to heaven, and was believed to carry the thunder and lightning of Zeus. According to later authors, however, he was the horse of Eos. The myth concerning P. is interwoven with that of the victory of Bellerophon over Chimera. Bellerophon had in vain sought to catch P. for his combat with this monster; but was advised by the seer Polyidos of Corinth to sleep in the temple of Minerva, and the goddess, appearing to him in his sleep, gave him a golden bridle and certain instructions, upon which he acted, and made use of P. in his combat with the Chimera, the Amazons, and the Solymi. P. is spoken of also in modern times as the horse of the Muses, which, however, he was not. The ancient legend on this subject is, that the nine Muses and the nine daughters of Pieros engaged in a competition in singing by Helicon; and everything was motionless to hear their song, save Helicon, which rose ever higher and higher in its delight, when P. put a stop to this with a kick of his hoof, and from his hoof-print arose Hippocrene, the inspiring spring of the Muses. But that P. is the horse of the Muses is entirely a modern idea, being found first in the *Orlando Innamorato* of Boiardo.—An anc. constellation was named P. from this mythical horse.

PEGLI, *pāl'yē*: town in the province of Genoa, Italy; on the shore of the Mediterranean Sea, 6 m. w. from the city of Genoa. Large quantities of oranges are grown, and the place is a famous resort of travellers. Its almost perfect climate and the beauty of its scenery combine to render it attractive. There are several large hotels and bathing establishments. Pop. about 5,000.

PEGMATITE, n. *pěg'mă-tīt* [Gr. *pěgma*, anything compacted or congealed]: granite composed of quartz and felspar, containing sometimes flakes of silvery-white mica.

## PEGU—PEI-HO.

PEGU, *pē-gō'*: division in Brit. Burmah, till lately the central division, between Aracan in the n. and Tenasserim in the s.; comprising the valley of the lower Irrawaddy and the coast. In this sense it had (1872) 26,979 sq. m.; pop. 1,662,058. At the census of 1881 it had been severed into two divisions, P. and Irrawaddy, with minor readjustments. P., containing the districts of Rangoon, Hanthawadi, Tharrawadi, and Prome, had (1891) 9,299 sq. m.; pop. 1,441,220. The new division, Irrawaddy, had 16,805 sq. m., distributed into the districts of Thunkhwa, Bassein, Henzada, and Thayetmyo; pop. 1,487,260. Of the joint pop. of the two divisions, about 900,000 are true Burmans; but there is a sprinkling of Karens, who live in the wild and hilly districts, Taleins or Peguers, Shans, Khyengs, Yabaings, Indians, Chinese, and some other races.

The principal river of P. is the Irrawaddy (q.v.). In Mar., the river begins to rise, and gradually increases till its waters are 40 ft. above their lowest level. They rapidly subside in Oct., when the rains cease, and the n.e. monsoon sets in. Other rivers are the Hlaing or Rangoon, the Pegu, the Sittaung, and the Bhileng. P. was annexed to Brit. India at the close of the Burman war of 1852, since which time slavery has ceased, schools have been established, and various public works undertaken. Rice and teak timber are principal exports. A flotilla of steamers keeps up communication between Rangoon (q.v.), the principal port, and the chief stations on the Irrawaddy, conveying troops, stores, passengers, and mails from place to place.

P. is the name also of the n.e. 'township' of the Rangoon dist., containing the headquarters town of P. The n.w. portion is mountainous and forest-clad; southward the hills sink toward the fertile level land, covered with rice-fields. The Pegu river, 180 m. long, intersects the township, and finally joins the Rangoon river.

P. town, on the river, now a small place of about 5,000 inhabitants, seems, by the accounts of European travellers in the 16th c., to have been of great size and magnificence, strongly fortified. The anc. town was founded A.D. 573; and its sovereigns reigned over the Irrawaddy, conquered Ava, and successfully invaded Siam and Aracan.

PEH'LEVI: see PAHLAVI.

PEI-HO, *pā-hō'*: river of China, rising on the confines of Tartary, traversing the n. part of the province of Chih-le (q.v.) or Pechih-le, and falling into the Gulf of Pechih-le about 38° 30' n. lat. The attack on the escort of the British and French ambassadors, while ascending the Pei-ho to Peking 1859, June, led to the war with China 1860: see CHINA.

## PEINE FORTE ET DURE.

PEINE FORTE ET DURE, *pân fôrt â dÛr* [Fr. strong and hard pain]: species of torture formerly applied by the law of England to those who, on being arraigned for felony, refused to plead, and stood mute, or who peremptorily challenged more than 20 jurors, which was considered a contumacy equivalent to standing mute. In the beginning of the 13th c., this penalty seems to have consisted merely in a severe imprisonment with low diet, persisted in till the contumacy was overcome. But by the reign of Henry IV., it had become the practice to load the offender with weights, and thus press him to death; and till nearly the middle of the 18th c., pressing to death was the regular and lawful mode of punishing persons who stood mute on their arraignment for felony. The motive which induced an accused party, in any case, to submit to this penalty rather than to plead, was probably to escape the Attainder (q.v.) which would have resulted from conviction for felony. During the 15th, 16th, 17th, and even the 18th c., various cases are recorded of infliction of this punishment. Latterly, a practice prevailed which had no sanction from the law, of first trying the effect of tying the thumbs tightly together with whipcord, that the pain might induce the offender to plead. Among instances of the infliction of the *peine forte et dure* are the following: Juliana Quick, 1442, charged with high treason in speaking contemptuously of Henry VI., was pressed to death. Anthony Arrowsmith, 1598, was pressed to death (Surtees's *History of Durham*, III. 271). Walter Calverly of Calverly, Yorkshire, arraigned at the York assizes 1605, for murdering his two children and stabbing his wife, was pressed to death in the castle by a large iron weight placed on his breast (Stow's *Chronicle*). Major Strangways suffered death in a similar way in Newgate 1657, for refusing to plead when charged with the murder of his brother-in-law. In 1720 a man named Phillips was pressed in Newgate for a considerable time, till he was released on his submission; and the same is recorded in the following year of Nathaniel Hawes, who lay under a weight of 250 lbs. for seven minutes. As late as 1741, a person is said to have been pressed to death at the Cambridge assizes, the tying of his thumbs having been first tried without effect. The statute 12 Geo. III. c. 20 virtually abolished the *peine forte et dure*, by enacting that any person who shall stand mute when arraigned for felony or piracy shall be convicted, and have the same judgment and execution awarded against him as if he had been convicted by verdict or confession.

## PEIPUS—PEIRCE.

PEIPUS, *pā'ē-pōs*, LAKE: in n.w. Russia, surrounded by the govt. of St. Petersburg and the provinces of Esthonia and Livonia. On the s.e. it is connected with Lake Pskoff by a strait 16 m. in length and  $1\frac{1}{2}$  to  $4\frac{1}{2}$  m. broad. The length of both lakes is 87 m., greatest breadth about 40, depth 14 to 49 ft. Lake Pskoff receives the waters of the river Velekaia, and Lake P. is supplied by Lake Pskoff, and by the Embach, from the w., and other rivers. The waters of the lower lake are carried to the Gulf of Finland by the Narova. The lakes are studded with picturesque islands.

PEIRAMETER, n. *pī-rām'ē-tēr* [Gr. *peira*, trial, attempt; *metron*, a measure]: an instrument for ascertaining the amount of resistance to carriage-wheels on differently prepared roads.

PEIRCE, *pērss*, BENJAMIN, LL.D.: 1809, Apr. 4—1880, Oct. 6; b. Salem, Mass.; d. Cambridge: mathematician. He was graduated at Harvard Coll. 1829; appointed prof. of astronomy and mathematics 1842: this chair he held till his death. P. was frequently called to assist in matters connected with the coast survey, and directed the longitude determinations of that service 1852-67: he was supt. of the survey 1867-74. Under his administration, the survey was extended to a great geodetic system, stretching from ocean to ocean, thus laying the foundations for a general map of the country (see COAST AND GEODETIC SURVEY). P. took personal charge of the solar-eclipse expedition to Sicily 1870, Dec. After his retirement from the superintendency, he was retained as consulting geometer, in general supervision of the scientific part of the work. He was consulting astronomer to the *American Ephemeris and Nautical Almanac* 1849-67. P.'s eminence as a mathematician was established by his discussion of Leverrier's discovery of Neptune, in which he showed that, though the calculations of the French astronomer were in the highest degree accurate and worthy of all honor, the discovery of Neptune was a happy accident, because two very different possible explanations of the perturbations of Uranus existed. His next research was with regard to the rings of Saturn. Among his later mathematical researches was a laborious and exact calculation of the occultations of the Pleiades. Mainly to P.'s efforts is due the establishment of the present Harvard observatory. He was a member of the Amer. Acad. of Arts and Sciences, the Amer. Philosophical Soc., associate of the London Royal Astronomical Soc., and was one of the corporate members of the National Acad. of Sciences. Among his published writings are: *Elementary Treatise on Spherical Trigonometry* (1835); *Sound* (1836); *Plane and Solid Geometry* (1837); *Algebra* (1837); *Curves, Functions, and Forces* (2 vols. 1841-46). All the foregoing works he entitled 'elementary treatises.' They were followed by *Analytic Mechanics* (1855); *Linear Associative Algebra* (1870); and *Ideality in the Physical Sciences* (1881).



## PEIRCE—PEISISTRATOS.

PEIRCE, *pērs*, JAMES MILLS: born Cambridge, Mass., 1834, May 1; son of Prof. Benjamin P. He graduated from Harvard 1853; was tutor in that institution for several years; became asst. prof. of math. 1861, prof. 1867, and prof. of math. and astron. 1885. He is a member of various scientific societies; has contributed to periodicals; published *A Text-Book of Analytic Geometry* (1857), *Mathematical Tables Chiefly to Four Figures* (1879), and other works; and has edited his father's book *on Ideality in the Physical Sciences* (1881).

PEISHWA, *pāsh'wâ* or *pīsh'wâ* (Minister): title of the personage third in rank and authority at the court of the Mahratta Maharajahs of Satara, there being only the *Priti-nidhi* (Delegate of the Rajah) between him and his sovereign. However, during the weak reigns of Sevajee's descendants, the minister increased in importance, till, at the commencement of the 18th c., BALAJEE BISWANATH, then Peishwa, and a man of distinguished administrative ability and diplomatic talents, made himself virtually ruler of the Mahrattas (q.v.).

PEISISTRATOS, *pī-sīs'tra-tūs* (Lat. *Pisistratus*): famous 'tyrant' of Athens: b. toward the close of B.C. 7th c.—certainly not later than B.C. 612; d. 527; belonging to a family of Attica which claimed descent from Pylian Nestor. His father's name was Hippocrates, and through his mother he was related to the great law-giver Solon, between whom and P. intimate friendship long existed. He received an excellent education; and the charm of his manners, as well as the generosity of his spirit, was so great that (according to Solon), had he not been ambitious, he would have been the best of Athenians; but his passion for sovereign power led him to a policy of artifice and dissimulation, which detracts from the honor which might seem due to the generally beneficent character of his government. At first, P. co-operated with his kinsman Solon, and in the war against the Megarians acquired military distinction; but afterward, when probably his ambitious views had become more matured, he came forward as the leader of one of the three parties into which Attica was divided. These were: the *Pediæi* (party of the Plain), landed proprietors; the *Parali* (party of the Seaboard), wealthy merchant classes; and the *Diacrii* (party of the Highlands), chiefly a laboring population, jealous of the rich and eager for equality of political privileges. To the last of these P. attached himself; but he assiduously cultivated the good-will of all the poorer citizens, toward whom he acted as a benefactor. At last, P. took a decided step. Driving into the market-place of Athens one day, and exhibiting certain self-inflicted wounds, he called on the people to protect him against his and their enemies, alleging that he had been attacked for his patriotism. Solon, who was present, accused him of hypocrisy; but the crowd were, according to Plutarch, ready to take up arms for their favorite; and a general assembly of the citizens

## PEISISTRATOS.

being summoned, Ariston, one of P.'s partizans, proposed to allow him a body-guard of 50 men. The measure was carried, in spite of the strenuous opposition of Solon. Gradually P. increased the number, and B.C. 560, when he felt himself strong enough, seized the Acropolis. The citizens, in general, seem to have tacitly sanctioned this high-handed act. They were weary of the anarchic broils of the different factions, and probably glad to see their champion and favorite usurp supreme authority. Megacles and the Alcæonids—heads of the rich aristocratic party—immediately fled from the city. Solon, who loved neither oligarchic arrogance nor military despotism, but was a thorough constitutionalist, tried, but in vain, to rouse the Athenians against Peisistratos. P., who was not at all vindictive in his disposition, did not attempt to molest Solon; he even maintained the legislation of the latter almost intact, and distinguished himself chiefly by vigor of administration. He did not exercise his first 'tyranny' long. The *Pediæi* and the *Parali* rallied under Lycurgus and Megacles, united their forces, and overthrew the usurper, who was forced into exile. But the coalition of the two factions was soon broken up. Megacles hereupon made overtures to P., inviting him to resume his tyranny, which he did; but a family quarrel with Megacles induced the latter to ally himself again with Lycurgus, and P. was driven from Attica. He retired to Eubœa, where he remained ten years, ever keeping an eye, however, on Athens, and making preparations for forcible return. How P. managed to acquire so much influence, while only a banished man, is not evident; but certain it is that many Greek cities, particularly Thebes and Argos, placed full confidence in him, and finally supplied him abundantly with money and troops. P. at length sailed from Eubœa, landed in Attica at Marathon, and marched on the capital. His partizans hurried to swell his ranks. At Pallene, he encountered his opponents, and completely defeated them, but used his victory with admirable moderation. When he entered the city, no further resistance was made, and he at once resumed the sovereignty. The date of this event, as of most others in the life of P., is very uncertain; probably B.C. 543 would be a conjecture not far wrong. He lived 16 years afterward in undisturbed possession of power, and transmitted his supremacy to his sons, Hippias and Hipparchus, known as the *Peisistratidæ*. His rule was mild and beneficent. Although the precautionary measures that he adopted to establish his authority involved at first a certain resolute and stringent policy (e.g., seizure of the children of his leading opponents, and detaining them as hostages), yet no sooner had he placed himself out of danger than he began to display that wonderful tact, moderation, kindness, and sympathetic appreciation of the wishes of the Athenians, that have won him the praise and esteem of later ages, in spite of his usurpation. He firmly, but not harshly, enforced obedience to the laws

## PEKAN—PEKIN.

of Solon; emptied the city of its poorest citizens, and made them agriculturists, supplying such as had no resources with cattle and seed; secured provision for old and disabled soldiers; bestowed great care on the celebration of the religious festivals of the Atticans, and even introduced some important changes; encouraged literature more than any Athenian had ever done before—it is to P., or to the poets, scholars, and priests that he gathered about him, that we owe, e.g., the first complete edition of Homer (q.v.); and, like his more brilliant successor in the following century, Pericles, he adorned Athens with many beautiful buildings, such as the Lyceum, a temple to the Pythian Apollo, another to Olympian Zeus, etc.

PEKAN, n. *pěk'ăn* [F. *pékan*], or WOOD-SHOCK (*Martes Canadensis*): species of Marten (q.v.), very nearly allied to the sable; native of n. parts of N. America. It is twice the size of the pine marten, and is generally of grayish-brown color; the legs, tail, and back of the neck marked with darker brown. The fur, though not so valuable as sable, nor even as that of the pine marten, is useful; and large quantities are sent to market. The P. lives in burrows which it excavates in the banks of rivers, and feeds chiefly on fish and other aquatic animals.

PEKIN, *pě'kĭn*: city, cap. of Tazewell co., Ill.; on the Chicago Santa Fé and California, the Jacksonville Southeastern, the Cleveland Cincinnati Chicago and St. Louis, the Peoria and Pekin Union, and the Peoria Decatur and Evansville railroads, and on the Illinois river; 10 m. from Peoria, about 160 m. s.w. of Chicago. There are 12 churches; several excellent schools; 2 daily and 4 weekly newspapers, one of the latter printed in German; 2 national banks (cap. \$200,000) and a private bank. The manufactures are extensive, including flour, organs, wagons, and agricultural implements. Coal is mined in the immediate vicinity, and there are two iron foundries. The surrounding country is very productive, and the city is a shipping point for large quantities of grain and pork. There is abundant supply of water, the streets are lighted with gas, and a public park is maintained. The first white settlement was made 1831, and articles of incorporation were secured 1849. Pop. (1880) 5,993; (1890) 6,347; (1900) 8,420.

## PEKING.

PEKING, *pē-kīng'*, or PEKIN, *pē-kīn'* (i.e., Northern Capital): city, cap. of Chinese empire since 1421; on a sandy plain, about 13 m. n.w. of the Pei-ho; lat.  $39^{\circ}54'13''$  n., long.  $116^{\circ}28'54''$  e.; in the n. province of Chih-le, nearly 100 m. from the sea, about 60 m. from the great Chinese wall. Pop. estimated about 1,000,000; circuit of the walls, according to the latest measurements, 20 m. These walls are of earth, with outer casing of brick, having embrasures for musketry or ordnance every 50 ft. Those of the Tartar City have an average height of 50, but in some places 61, ft. In thickness they vary from 57 to 22 ft. The walls of the Chinese City are only 30 ft. high, and 15 to 25 wide. The top, to which horsemen can ascend by a ramp or sloping way, is paved with stone. At intervals of 60 yards are square towers or buttresses, projecting outward from the walls 50 or 60 ft. Of the 16 gates which give access to the city from the surrounding country, 9 belong to the Northern or Tartar City, and 7 to the Southern or Chinese City. Over each gate is a watch-tower nine stories in height, loop-holed for cannon.

The city of P. is divided into two parts, separated by a wall with three gates. These two sections form respectively the Northern, Interior, or Tartar City, called *Nei-tching* ('within the walls'); and the Southern, Exterior, or Chinese City, called *Wai-tching* ('without the walls'). 'Tching' or 'ching,' it may be remarked, means both city and wall. Northern City and Southern City are the correct terms. The latter was added to the more ancient Northern City, and was originally designed to encircle it; hence it was called the Exterior City. It was also intended to reserve the Northern City for the Tartars, and the Southern City for the Chinese, as the names still imply; but, in fact, the Tartar City contains as many Chinese as Tartars; and it is not surrounded by the so-called Chinese City, which latter has been added on only the s. side.

1. *Nei-tching, or the Northern City*, has three distinct divisions or inclosures—viz., Kin-tching, or the Prohibited City; the Hwang-tching, or Imperial City; and the General City. The first—the innermost or central block—is surrounded by a red brick wall about two m. in circumference, which shuts in the palaces, pleasure-grounds, and temples of the sacred city. Here live the emperor and his family, the ladies of the court, and the attendant eunuchs. The palace proper consists of four large and two small buildings; the larger called the Tching-kung, or 'the Palace,' the Tung-kung, Si-kung, and Kin-luan-teen. The smaller buildings are allotted to the dowager-empress and suite; they are called the Ning-shou-kung and the Keen-tsing-kung, or 'Palace of Earth's Repose.' Other notable buildings of the Prohibited City are Fung-seen-teen, 'Temple of Imperial Ancestors;' Tching-hwang-meau, 'Guardian Temple of the City;' Nan-heun-teen, 'Hall of Portraits of the Chinese

## PEKING.

Emperors and Sages;’ and Wan-yuen Ko, ‘Hall of the Literary Abyss,’ i.e., the Imperial Library. It contains also the offices of the cabinet, in which the members hold their sessions, the imperial treasury, the court of controllers for regulation of receipts and expenses of the court, etc.—The Imperial City is built around this central block, and contains the palaces of the princes, temples, some of the govt. offices, and spacious pleasure-grounds, with beautiful artificial lakes. From Woo-ying-teen, the imperial printing-office, the *Imperial* or *Pe-king Gazette* is issued daily for all govt. officials throughout the empire. This is the only native publication in China approaching to a newspaper, and is named *King Paou*, or ‘Great Report.’ It is not merely a report for official information, but forms the basis of the national annals, and is compiled from the daily records of the supreme council. Besides the daily edition, there is one published every two days, which is sold to the public, and from which are withheld secret decrees and reports. The journal itself is a miserable production even for China, and consists of 15 to 20 pages not so large as common note-paper.—The General City—the third division or inclosure—lies between the Imperial City and the outside walls; it is more densely populated than either of the preceding divisions, and contains the most important of the public offices, including the six supreme tribunals or boards—the Le-fan-yuen, or Office of Foreign Affairs; Too-cha-yuen, or Imperial Censorate, etc.; Han-lin-yuen, or Grand National College; the Great Medical College; the Observatory; the Examination Hall, with—it is said—ten thousand cells for the candidates who assemble to compete for public offices; and the British, French, Russian, and U. S. legations. There are also the Lama temple, founded 1725–30 to conciliate the Tibetan priesthood; the temple of Confucius, in which the emperor solemnly ‘worships’ the great sage once a year; and the Mohammedan mosque. The British minister resides in the Leang-kung-foo, or the Palace of Leang, a gorgeous building, consisting of four or five large halls, and covering about five acres of land. The principal streets of the General City—140 to 200 ft. wide, and unpaved—are continuous lines of shops painted red, blue, and green, decorated with staring signs, and resplendent with Chinese characters highly gilt. By day and by night, by the light of the sun or of torches and paper lanterns, the roar of these great thoroughfares is incessant—shopkeepers, pedlers, mountebanks, quack-doctors, passengers on foot or on horseback, contributing to the general hubbub. The minor streets and lanes, where the houses of the populace are mingled with public offices, temples, stores, and manufactories, are not pleasant places; their general characteristics being an ‘insupportable odor,’ and one-storied brick houses with gray roofs. There is ‘Fetid Hide Street,’ ‘Dox’s-tooth Street,’ ‘Dog’s-tail Street.’

## PEKING.

‘Barbarian Street,’ and many others with names equally uninviting.

2. *Wai-tching, or the Southern City*, the second great division of P., contains most of the mercantile population of the capital, but does not present many features of interest to the traveller. Teen-Tan, or the Temple to Heaven, and Tee-Tan, or the Temple to Earth, with their grounds, occupy a considerable space. The latter is considered a sort of temple of agriculture, and its grounds are the scene of the well-known ceremony in which the emperor, assisted by members of the board of rites, opens the ploughing season in China at the vernal equinox. The theatres and places of public amusement likewise are in the Southern or Chinese City; also the Golden Fish-ponds and the execution-ground.

Outside the city are unwalled suburbs, as around every walled town in China. These are of considerable extent, but straggling, and contain principally an agricultural population, the land being everywhere in cultivation, producing chiefly maize and millet, as it is not so suitable for the staple products of rice and wheat. The land is poorly watered, but well timbered, which gives a pleasing aspect to the landscape; and, when viewed toward the range of mountains extending from the w. of P. to the n.e., presents a picturesque panorama. About 8 m. n.w. of P. are the famous Yuen-ming-yuen (literally, ‘Round and Splendid Gardens’) palaces, sacked and destroyed by the allies 1860, Oct. These were 30 in number, surrounded by every variety of hill and dale, woodland and lawn, interspersed with canals, pools, rivulets, and lakes, with numerous temples and pagodas containing statues of men and gods in gold, silver, and bronze. Here had been heaped up for centuries all the movable riches and presents of the emperors of China, among which were found many sent by the English embassies. At the approach of the allies, Hien-fung fled in haste; and when Lord Elgin learned that it was in those grounds that the British and French prisoners, captured by treachery, had been tortured, he gave the order to sack and destroy this favorite residence of the emperor, ‘as it could not fail to be a blow to his pride as well as his feelings; and it became a solemn act of retribution.’ The palaces were cleared of every valuable, and their walls destroyed by fire.

P. has thus been rendered memorable by this march of the British and French forces (1860) to the walls of the city, on which the British and French flags were raised. The provisions of the treaty of Tien-tsin 1858 (see CHINESE EMPIRE) were ratified and supplemented by the *Convention of P.*, signed in the English and French languages at P. 1860, Oct. 24. The most important article of this convention is that which allows the residence of a British envoy at P., a privilege formerly possessed by Russia alone. Great benefits have resulted to both governments from this step. The same privi-

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lege has been granted to the French and U. S. govts. Foreigners of all nations are allowed to visit, but not to trade, within the precincts of the city.

P. is a very ancient city. Centuries before the Christian era, it was cap. of the kingdom of *Yen*; but when this kingdom was overthrown by the *Tsin* dynasty B.C. 222, the seat of govt. was removed elsewhere. About A.D. 938, it, again, became cap. of the *Kitan* dynasty. In 1215 it was captured by Genghis Khan; and 1264 Kúblai Khan (whom readers of Coleridge will remember) fixed his residence here. *Cambaluc* or *Cambalu* (City of the Khan) was the name under the Mongols given to the new or Northern City established here. The native emperors, however, who succeeded the Mongol dynasty, removed the court to Nanking, which was reckoned the chief city of the empire till Yung Lo, third emperor of the Ming dynasty, 1421, once more made P. the imperial residence. In 1900, June 20—Aug. 14, during the Boxer uprising, the foreign legations in P. were besieged, and their members with other foreigners were only saved from massacre by a joint force of 50,000 troops sent by the Powers.

PEKOE, n. *pē'kō* [Chin. *pek*, white; *hao*, hair or down]: kind of tea whose fragrance is much esteemed; so named because, when picked, the young leaves have their 'down' still on: called also *Peckoe* or *Pecco*.

PEL, n. *pěl*: stake or wooden 'dummy' used in practice by swordsmen striking at it, meanwhile guarding themselves as though against its meditated strokes.

PELA, n. *pē'lâ* [Chin.]: Chinese wax; named from the hemipterous insects from whose waxy secretions it is prepared.

PELAGE, n. *pěl'āj* [from Sp. *pelage*, hair (in mass)]: hair, fur, wool, etc., of animals; technical name, correspondent to *plumage* in ornithology.

PELA'GIAN: same as PELAGIC (q.v.).

## PELAGIAN—PELAGIANISM.

PELAGIAN, n. *pě-lā'jĭ-ăn*: a follower of *Pelagius* (q.v.):  
ADJ. pertaining to Pelagius, or to his doctrines.—See  
PELAGIANISM.

PELAGIANISM, *pě-lā'jĭ an-ĭzm*: doctrinal system of Pelagius (q.v.), especially on the subjects of the natural condition of man, original sin, grace, free-will, and redemption. For what may be called the external history of the controversy to which the opinions of that remarkable man gave occasion, see PELAGIUS. The movement, considered in itself, is one of the most interesting in the history of the human mind. At the close of the great controversies on the Trinity and Incarnation, the speculation, which for nearly a century had wearied itself in vain endeavors to make plain the inscrutable mysteries of the divine nature, at length turned inward upon humanity itself; and the careful student of the controversy on P. can scarcely doubt that that prouder view of the capabilities of human nature, which lies at the root of all the theories of which P. was the exponent, was a reaction against the crude and degrading conceptions of the nature and origin of the soul which characterized the philosophy of not only the Manichean teachers, but of all the dualistic religions which sprang from the prolific soil of Gnosticism. To the Manichean, and to all in general who adopted the Gnostic views as to the evil origin and nature of matter and material substances, man was, in his *psychical* nature, evil and incapable of good. The Christian teacher, in combating this view, easily passed into an opposite extreme, and overlooking or explaining away the strong language of the Scripture, was led to represent man as endowed with full capacity for all good; and so long as the only adversaries to be controverted were those who urged the views of the Gnostic school, the line taken by Christian writers was but little guarded by any of those limitations and reserves which have arisen in later controversy: thus the earlier Fathers, especially those of the Eastern Church, where Gnosticism was chiefly to be combated, are found to press earnestly the power for good which man possesses, without entering nicely into the origin or the motive principle of that power. But whatever of vagueness hung over this important subject was dispelled by the bold and precise statements of Pelagius, or at least by the discussion which at once arose thereupon throughout the entire church. Pelagius sought to take away the excuse for wrong doing, that man is under bondage to sin, therefore incapable of doing any good thing. The scandalous laxity of conduct which he saw availing itself of this excuse, may have moved him to his strong assertions of man's natural nobleness of faculty and his consequent responsibility for right choices and good acts. For his teaching on original sin and on the primitive state of man, see ORIGINAL SIN. The earliest formal embodiment of these doctrines, for the purpose of obtaining upon them the public judgment of the church, was in a number of articles presented to the council of Jerusalem, 415, by Orosius: see PELAGIUS. Of these, the first five regarded the doctrines already noticed under ORIGINAL SIN. The latter portion of the



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articles alleged that no grace or aid from God was needed for particular actions; but that free-will and the teaching of the law sufficed; that God's grace is given in proportion to our merits; that free-will would not be free, if it stood in need of aid from God; that the pardon of penitents is granted them not according to God's grace and mercy, but according to their own merit and labor; and that our victory does not come from God's assistance, but from our free-will. Although the final sentence condemnatory of these doctrines (see PELAGIUS) was very generally accepted, yet the recusant party was not lacking in energy and ability. The great champions on each side were Augustine for the orthodox, and Julianus, Bp. of Eclanum, for the Pelagians. For so much of the controversy as regards original sin, see that title: that on grace and free-will was more subtle, and has led to more numerous divisions on the side of orthodoxy as well as of heterodoxy. In order to evade the condemnation of the doctrine originally ascribed to them as to grace, Pelagius and his followers declared that they did not deny the necessity of grace; but by this name they did not understand any real and internal supernatural aid given by God in each particular action, but only either some general external assistance, such as preaching, the Scriptures, good example, etc.; or an aid given which might facilitate and secure the particular work, but which was not necessary for its accomplishment. Whether, indeed, they at any time admitted any real internal grace, is a question. Grace may be of two kinds—that which moves the will, and that which enlightens the understanding. It is necessary, too, to distinguish two periods in the history of P.—one before the appearance of the *Epistola Tractoria* of Pope Zosimus; the other, subsequent. In the first period, the Pelagians seem not to have admitted the necessity of any internal grace whatever; in the latter, they admitted the necessity of a grace of the intellect, but not of the will; or if they seemed to speak of any internal grace of the will, it was only as facilitating man's act, not as at all necessary to his doing it. The Pelagian theory, in a word, was, that man, as coming from his Creator's hand, possessed in himself and as constituents of his own nature, all the powers necessary for the attainment of salvation; that by the faithful employment of these natural powers without any further aid whatever from God, he merits eternal life, and all other rewards, by a strict title of justice; and that, to suppose grace to be necessary, is, in truth, to destroy the essence of free-will. This doctrine was somewhat modified—though not at its deepest root—in the Semi-Pelagian System (q.v.). The Rom. Cath. schools, all without exception, maintain the necessity of grace for the performance, not only of all meritorious, but of all supernatural good works; and they are equally unanimous in maintaining that the grace so given, even that which is called 'efficacious,' does not destroy the freedom of the will. They distinguish between the 'natural' and the 'supernatural' order, and between the powers and gifts proper to the one and to the other.

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For the attainment of all the ends of the natural order, they assert that man possesses, by his very constitution, all necessary powers and gifts; and by the proper use of these powers, he is able to merit all the rewards which belong to the natural order. He is able, therefore, without any supernatural grace, to perform morally good works (e.g., acts of natural benevolence, the fulfilment of the ordinary duties to his neighbor, etc.), and to fulfil the purely natural obligations. But in order to works in the supernatural order (such as the love of God above all things for His own sake, faith in Him as the author of all good, etc.), and to the rewards promised for such works, the will of man must be moved and strengthened by supernatural grace, with which the will freely co-operates, but which is a purely gratuitous gift of God—so purely gratuitous, that though God has promised eternal life as the reward of man's co-operation, yet the merit arises entirely from God's gift and promise, and not from the natural powers of the human will.

It has repeatedly been pointed out that P.'s doctrine of man was essentially naturalistic—tending to make divine grace needless, and to deny all immediateness of the divine influence on the human soul. Though P. did not follow out his theory to its logical consequence, the theory itself involved no necessity for the atonement.

Without going into the details of the teaching of the Rom. Cath. schools on this subject, it will be enough to particularize the most remarkable. Of these, the chief are the Molinist, which, giving most to liberty, lies nearest to the border of P., but is clearly distinguished from it by maintaining the necessity of grace for every supernatural act; and the Thomist and Augustinian, which give most to grace, but at the same time expressly preserve the freedom of man's will. The Thomists are often represented as denying the freedom of man's actions under grace; but though it is difficult to explain, in popular language, their method of reconciling both, yet, to those acquainted with the scholastic terminology, their distinction between the infallible efficaciousness of grace, and its imposing necessity on the will, is perfectly appreciable. In this they, as well as the Augustinian school, differ from the Jansenists (q.v.). The Jansenists, indeed, regard the Molinist school as a plain revival of P.; and they profess that they alone represent fully, in their own system, the very same position which St. Augustine formerly maintained against that heresy in its first origin.

In the Reformed Church, the Arminian doctrine may be said to correspond in the main with the Molinist system in the Roman Church. The Gomarists, in most, though not in all particulars, fall in with the Jansenistic views. The Pelagian views are distinctly represented in modern controversy by the Socinians and Rationalists; and indeed very many of those who, outside of the Roman Church, have at various times engaged in the predestinarian controversy on the side of free-will, have leaned toward, if they have not fully adopted, the Pelagian view. In this contro-

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versy, however the practice, common in polemics, of imputing to an antagonist the extremest views of the particular side to which he leans, has been especially noticeable. The Jesuits have been stigmatized, even by their Rom. Cath. antagonists, as Pelagians; the Thomists are called by the Jesuits indiscriminately Jansenists and Calvinists; while both unite in representing Calvin and his school as in substance Manichean.

Hardly one among the many Christian controversies has called forth greater subtlety and power, and not one has so long and so persistently maintained its vitality. Within the 25 years which followed its first appearance, more than 30 councils (one of them, the General Council of Ephesus) were held for the purpose of this discussion. It lay at the bottom of all the intellectual activity of the conflicts in the mediæval philosophic schools; and there is hardly a single subject which has come into discussion under so many different forms in modern controversy. Indeed, the subject brings into discussion that profoundest of all problems—the inter-action of God's predestination and man's free-will; Pelagianism (and really Semi-P., q.v.) magnifying free-will, Augustinianism, magnifying the sovereign will and grace of God. Milman's remark that 'no Pelagian ever has worked or ever will work a religious revolution,' accords with the observed fact that P. is the creed to which men tend in quiet, uneventful, unheroic times. See JANSEN: ARMINIUS: GRACE: PREDESTINATION: REPROBATION: ORIGINAL SIN: TRADUCIANISM.

PELAGIC, a. *pě-lāj'ik* [Gr. *pelúgos*, the sea]: pertaining to the deep sea or outer ocean, in contradistinction to littoral or along shore.

PELAGIUS, *pě-lāj'jŭs*: celebrated theologian, famous opponent of Augustinianism; author or systematizer of the doctrine known as PELAGIANISM (q.v.); b. prob. about or after the middle of the 4th c., in Britain (according to some, in Bretagne); his name being supposed to be a Greek rendering (*Pelagios*, of or belonging to the sea) of the Celtic appellative *Morgan*, or sea-born. Of his early life little is known. He was a monk, but the time and place of his entering that state are unknown; it is certain, however, that he never entered into holy orders. He settled in Rome, and at the end of the 4th c., he had acquired considerable reputation for sanctity and for knowledge of the Holy Scriptures and the spiritual life. P. does not appear to have himself been a very active propagandist; but he had attached to his views a follower of great energy and bold and ardent temper, named Celestius, generally supposed to have been a Scot, which in the vocabulary of that age means native of Ireland. At Rome, however, these men attracted little notice, though they began to make their doctrine public about 405; and in 410, after the sack of the city by the Goths, they withdrew to Africa. After some time, P. made a pilgrimage to Jerusalem, where he met St. Jerome, and for a time enjoyed the regard and confidence of that eminent but hot-tempered scholar. His opinions, however, becoming known, Jerome withdrew from this association.

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Celestius having remained at Carthage, and sought to be admitted to ordination, his doctrines became the subject of discussion and in a synod several opinions ascribed to him were condemned. He appealed to Rome, but leaving Carthage without prosecuting the appeal, he passed to Ephesus; and the proceedings taken in Carthage regarding him are important chiefly as having introduced St. Augustine into the controversy. Meanwhile P. remained at Jerusalem; and news of the proceedings at Carthage having been carried to Palestine, P., 415, was accused of heresy before the synod of Jerusalem, by a Spaniard named Orosius. The impeachment failed, probably from the fact that Orosius was unable to speak Greek, the language of the synod; and in a subsequent synod at Diospolis in the same year, P. evaded condemnation by accepting the decrees of the synod of Carthage above referred to, and even obtained from the synod an acknowledgment of his orthodoxy. The West, however, was more sharp-sighted or less indulgent. A synod of Carthage, 416, condemned P. and Celestius, and wrote to Pope Innocent I., requesting his approval of the sentence, with which request Innocent complied by a letter still extant. On the death of Innocent, Celestius came to Rome in person, and P. at the same time addressed a letter to Zosimus, successor of Innocent; and in a council which Zosimus held, Celestius gave such explanations that the pope was led to believe that the doctrines of P. had been misunderstood, and wrote to call the African bishops to Rome. A council of 214 bishops, however, was held in Carthage, in which the doctrines of P. were formally condemned in nine canons, which were sent to Rome with full explanations; and on receipt of these decrees, Zosimus re-opened the cause, cited and condemned Celestius and P., and published a decree, called *Epistola Tractoria*, adopting the canons of the African council, and requiring that all bishops should subscribe them, under pain of deposition. Nineteen Italian bishops refused to accept these canons, and were deposed. Their leader, and the person who may be regarded as the greatest theological advocate of P. in the ancient controversy, was the celebrated Julian, Bp. of Eclanum, near Beneventum, known to every reader of his great antagonist, St. Augustine. P. himself was banished from Rome, 418, by Emperor Honorius. From this date, P. disappears. Of his after-life, nothing is known in detail. Orosius gives an unfavorable account of his later career, but in a period of such excitement, we may not accept implicitly the judgment of an adversary. The most trustworthy accounts show P. to have been a man of devout spirit and of pure life. The controversy, considered as an exercise of intellectual energy, is the most remarkable in the ancient history of the church. But the most important of the writings on the Pelagian side have been lost. Julian is known chiefly through the replies of Augustine. P.'s *Fourteen Books of a Commentary on St. Paul's Epistles*, his *Epistle to Demetrius*, and his *Memorial to Pope Innocent*, have escaped destruction probably from their being included by collectors in the works of St. Jerome. They are much mutilated, but yet

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almost certainly genuine. All his other works have been lost, except some further portions, chiefly fragmentary, which (with the above) have been published under the title *Appendix Augustiniana*. After his banishment, P. is supposed to have returned to his native country, and to have died there. Others, however, represent him as having died in Palestine. For his doctrines in detail, see PELAGIANISM.

PELAGO, *pā'lá-gō*: town in the province of Florence, Italy, on elevated land, about 15 m. e. of Florence, and in the same commune as Vallombrosa, which is the seat of a famous and wealthy convent. Woolen goods and earthenware are manufactured. In feudal times the bishops of Fiesole held P. as a fief. Pop. about 10,000.

PELARGONIUM, n. *pěl'ár-gō'nī-ŭm* [It. *pelargonio*; F. *pelargon*—from Gr. *pelargos*, a stork]: stork's-bill; genus of beautiful flowering plants, ord. *Geraniaceæ*. PEL'ARGON'IC, a. *-gōn'ik*, pertaining to.—*Pelargonium* includes many of the most favorite greenhouse flowers, to which the old generic name *Geranium*, is often popularly given. For the characters which distinguish P. from geranium as now restricted by botanists, see GERANIUM. The species are numerous, and mostly s. African; Australia also producing a few. Some are herbaceous, and some are stemless; most of them are half-shrubby. Some have tuberous root-stocks. The leaves show great variety in form, division, etc. The flowers always adhere to a certain type in form, but with great variety in size, color, etc.; they are always in stalked umbels, which arise from the axils of the leaves, or in the stemless kinds from the midst of the leaves. In no genus has the art of the gardener produced more striking results than in this; and the number of beautiful hybrids and varieties is very great, some of them excelling in beauty any of the original species. Some species with little beauty of flower, are cultivated for the odor of their leaves, which in some resembles that of roses; in others, that of apples, lemons, etc., while that of many species is rather unpleasant. The cultivation of P. is similar to that of other *Geraniaceæ*: see GERANIUM. Water must be liberally supplied during the time of flowering: but no plants more strongly require a period of rest, and water must then be very sparingly given. Many of the shrubby kinds may be taken out of the soil, hung up by the roots in a dry dark cellar, or covered with hay, and put aside in a box, in a cool dry loft or garret, care being taken to protect them from frost. Every leaf should be removed before they are taken up, and young watery shoots should be cut off. Another method of treating them is to cut off every leaf before frost comes, and to keep the plants all winter in their pots in a dry, cool room, without giving them a drop of water. By such means, many of this beautiful genus are successfully cultivated by persons who have no greenhouse. PELARGONIC ACID, *pěl'ár-gōn'ik*, or NONYLIC ACID, *nōn-ŭl'ik* or *nō-nŭl'ik* ( $C_9H_{18}O_2 = C_8H_{17}.CO_2H$ ), fatty acid, obtained first from the leaves of *Pelargonium roseum*, in which it exists ready formed. It may be procured by

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the action of nitric acid on the oil of rue; also, together with other fatty acids, by the action of boiling nitric acid on oleic acid. It is formed synthetically by the action of boiling alcoholic potash on octyl cyanide,  $C_8H_{17}.CN$ . It is a liquid having a slightly unpleasant odor, solidifying at  $54^\circ$  and boiling at  $487^\circ$ . *Ethyl pelargonate*,  $C_9H_{17}O_2.C_2H_5$ , produced by dissolving the acid in strong alcohol, and passing hydrochloric acid through the solution, has a powerful and most intoxicating vinous odor.

PELASGIANS, *pē-lās'jī-anz*, or PELASGĪ, *pē-lās'jī* [variously explained as denoting either 'Swarthy Asiatics' (*Pell-Asici*), or 'Storks' (*Pelargoi*)—significative of wandering habits; or as being derived from the biblical *Peleg* (Gen. x. 25), or from the Greek *Pelagos* (the Sea) or *pelazo* (to approach), or *pelein* and *agros* (to till the field), etc.—'a name, in fact,' as Niebuhr says, 'odious to the historian, who hates the spurious philology out of which the pretenses to knowledge on the subject of such extinct people arise']: tribe, or number of tribes inhabiting Italy, Thracia, Macedonia, a part of Asia Minor, and various regions of s. Europe, in prehistoric times. Ethnologically, they belong to the same race as the great stock of the earliest known settlers, that reached from the Po and the Arno to the Rhyndakus (near Kyzikus). Yet as no Pelasgian town or village existed in Greece Proper after B.C. 776, speculation has, ever since the commencement of European historiography, been trying to supply the facts that were lacking for ascertainment of the exact origin and history of these predecessors of the Hellenes and Romans; but so futile have all efforts in this direction remained, that the very term Pelasgi has, from the days of Homer to our own, been used almost arbitrarily to designate either a single obscure division of a tribe like the Leleges and the Dolopes, or as an equivalent for all the Greeks of a very early period. In this latter sense, they are spoken of by Æschylus, Herodotus, Homer; while they are considered one of the branches of the race or races that peopled Greece, by Thucydides, Strabo, and most modern writers—the word thus being not a comprehensive term, like Arian, but a narrowly circumscribed one, like Hindu. Recent investigation seems, as regards their previous history, to lead to the result, that soon after the first immigration of Turanians, they like other tribes left their Asiatic homes, and proceeded toward Europe. They are found at a very early period settled in Asia Minor; and Homer speaks of them as allies of the Trojans. They then seem to have spread themselves, by way of the Propontis and Ægæan, and again by Crete, over many of the islands between the two continents; and finally came to occupy a great part of the Hellenic mainland—Thessaly, Epirus, the Peloponnese, Attica, Macedonia, Arcadia, provinces which, one and all, till the latest period, bore distinct traces of the once undisputed sway of the Pelasgians. According to Herodotus, the Hellenes themselves sprang from them; and there can hardly be a doubt that they formed a most important element in the formation as well of that most gifted of nationalities, as of the Latin people.

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(See HELLAS.) The early Etruscans (q.v.) were P. to a certain extent; and the southern tribes of the Peucetians, Æno-trians, and Iapygians are distinctly declared by ancient writers to belong to their race. The step from Greece into Italy is natural enough. What caused their wanderings originally, is difficult to conjecture; but it may reasonably be assumed, that the wanderings were caused to a certain extent by immigrations of eastern tribes, such as the Lydians, Phrygians, Carians, who, as they took possession of their old homes, pushed the P. further and further west. A special stock was formed by the Tyrrhenian P., whose gradual advance in Greece may be traced from Acarnania to Bœotia, thence to Attica, and later still, to the Hellespont, Lemnos, etc. A strong protest, however, must be recorded here on the part of some modern writers against the assumption of others, that the P. were in reality the original population of all Italy, as they were of the greatest part of Greece (Pelasgia). It is absurd, they argue, to suppose that a rich and populous nation, which had held a country like Italy for many centuries, should suddenly, just at the approach of historical times, die out without leaving even such single remnants as the Pelasgic settlements in Greece mentioned by Herodotus. These aboriginal Italian P. are, according to these investigators, a mere hypothesis of ignorant ancient writers, who wished to explain, in an easy manner, the ethnological and philological affinity between the two classical nations, and who, anticipating the questions about a contemporary colony, kill off the whole nation by pestilence and famine.

The P., from what we can glean about them, appear to have been a highly intellectual, receptive, active, and stirring people, of simple habits withal, intent chiefly on agricultural pursuits. Several improvements in this department were distinctly traced back to them, e.g., the plowing with oxen—for which purpose they had to invent the special goad; further, the art of surveying, etc. Yet they were warlike when attacked and driven to self-defense; and the trumpet, which calls the widely scattered troops to the attack, was supposed to have been first used by them. That the art of navigation was known to them, is shown sufficiently by their incessant migrations over sea and land. Of their architecture, in that style which, in default of a better name, has been called Cyclopean (q.v.), remnants are extant. The names Larissa, Argos, Ephyra, frequently met in ancient Greece, were bestowed by them on their fortified cities, and are only generic names, expressive of either mountain fortresses or strongholds in plains. Wishing to remain in peace, they endeavored to keep off the invader by walls so enormously strong, that it seems surprising that they ever could have been taken. Besides these, they built canals, dams, and subterranean water-works of astounding strength and most skilful construction. The accompanying wood-cut represents the tomb or treasury of Atreus at Mycenæ, vaulted with a fine pointed 'horizontal arch,' 48½ ft. in diameter. Of their sculpture, which they no doubt cultivated to a certain degree, we have but

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very small relics, such as a head of Medusa, and a *Xoanon* (Divine Image) of Orpheus; besides these, certain traces of their special mystic worship are found in archaic representations, which, though not hitherto ascribed to them, bear their direct influence upon their very face. How far they

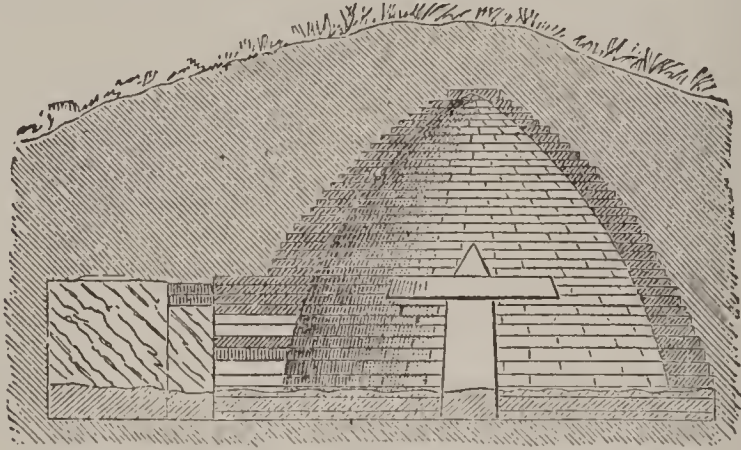


Fig. 1.—Section of Tomb of Atreus at Mycenæ.

were either the inventors of the so-called Cadmean or Phœnician writing-characters, from which all European characters are derived, or merely their 'improvers,' is not to be decided by the contradictory evidence found on the subject: but this at all events is certain, that they were acquainted with the art of writing, and had thus a vast element of culture in their possession before the dawn of history. Respecting their religion and worship, this only is to

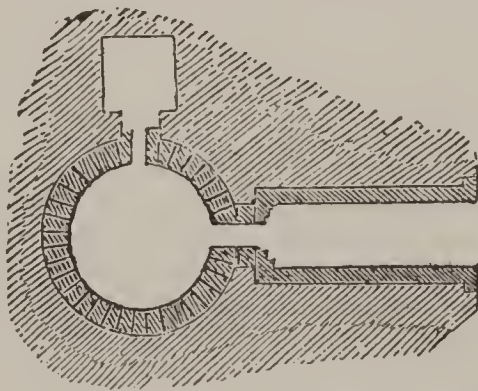


Fig. 2.—Plan of Tomb of Atreus at Mycenæ.

be held with certainty, that it consisted originally in a mystic service of those natural powers whose influence is visible chiefly in the growth of the fruits of the earth. From Egypt they obtained names for their till then nameless gods, generally called by them the *Theoi*; and they proceeded—by permission of the Dodonic oracle, which, together with the Pythian, they first founded—to bestow upon them individuality. Their deities were, besides the Phœnician *Kabiri*, *Demeter*, *Persephone Kora*, *Dionysos*, *Hermes*, *Zeus of Dodona*, *Apollo*, *Hephæstus*, *Themis*, *Pan*, etc. Whether those *P.* who inhabited *Lemnos* and *Imbros*, and who were conquered by *Darius*, offered human sacrifices or not, is doubtful. An ambiguous term of *Herodotus* respecting the language of those small Pelasgian remnants who had survived to his day has given rise to end-



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less unsatisfactory discussions. He speaks (i. 57) of their 'barbarous language;' and the question is, whether he meant that it completely differed from Greek, or that there was only so wide a divergence of dialect, that it had become unintelligible to his contemporaries. Grote inclines to the former opinion; Niebuhr, Thirlwall, T. O. Müller, followed by G. Rawlinson and others, hold, with more show of reason, that the term 'barbarous language' indicates merely a corruption or alteration of idiom, such as long lapse of time would infallibly produce; and that it bore the same relation to the Greek of the day as the Gothic does to the German, or the Latin to any of the Romance languages, not to instance the forlorn patois of out-of-the-way places in Switzerland and elsewhere, supposed to be inhabited by unmixed descendants from Roman legions. The other phenomenon of the vast number of roots common to both Greek and Latin—the Latin, it must be remembered, having been proved to be derived, not from the Greek, but from the Oscan—would thus easily be explained by the assumption of a common Pelasgian linguistic (as well as ethnical) stock in both nationalities.

Their political circumstances are as unknown to us as the whole process of transition between them and the real Greek period. From a few scattered allusions, we may conclude that they were not uniformly governed; that some of their multifarious tribes were ruled by priests, while others were under the patriarchal rule of the head of the clan or family.

How they gradually disappeared from the rank of nations, by being either 'absorbed' by superior races (Hellenes, Italic, Carians, Lydians, Phrygians), or being reduced to nameless serf-populations, does not seem so difficult to understand as some writers find it. Hundreds of nations have disappeared in the same manner, and we may even watch the process with our own eyes. Interesting as it might be to dwell more minutely on some of the widely divergent theories and speculations on the P. by historians, philologists, ethnologists, antiquaries, and investigators generally, to whom at all times this people have proved exceedingly attractive, we cannot enter further upon them. We conclude with Grote's dictum: 'If any man is inclined to call the unknown ante-Hellenic period of Greece by the name of Pelasgic, it is open to him to do so. But this is a name carrying with it no assured predicates, no way enlarging our insight into real history, nor enabling us to explain what would be the real historical problem—how, or from whom the Hellenes acquired that stock of dispositions, aptitudes, arts, etc., with which they begin their career.'

PELAYO, *pā-lá'yō*: said by historians to have been the first Christian king in Spain after the conquest of that country by the Arabs; to have been a scion of the royal Visigothic line; and to have died 737. Contemporary historians make no mention of him; but this may be accounted for on the ground of the insignificant size of his kingdom, which comprised only the mountainous district of Asturias. He is said to have retired before the conquering Arabs to the mountains of Asturias, where he maintained himself

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against the armies which were sent to attack him, defeating them in various pitched battles, and in numberless minor engagements. One of his most famous exploits was the destruction of a large army sent against him by Tarik, near Cangas-de-Onis. His men were posted on the heights bounding the valley through which the Arabs were to pass, and, waiting till the enemy had become involved in the defile, at a given signal overwhelmed them with enormous masses of rock. This great success caused P. to be recognized as sovereign by the surrounding districts, and the Christians flocked to him from all parts of Spain. He was much engaged in contests with the Arabs, nevertheless found time to reanimate agriculture, superintend the reconstruction of churches, and the establishment of a civil administration. Such is the account given by later historians, who trace from him the genealogy of the royal family of Spain.

PELECANIDÆ, *pəl-ē-kū'nĭ-dē*: family of palmiped birds, the *Totipalmati* of Cuvier; characterized by a long, straight, compressed bill, broad at the base, often with a pouch beneath the lower mandible; long wings, of which the first quill is the longest; short strong legs; and all the toes—including the hind toe—united by a membrane. They are generally excellent swimmers, expert divers, and birds of powerful flight. Some often perch on trees, which few other web-footed birds do. To this family belong pelicans, cormorants, frigate-birds, tropic-birds, and darters.

PÉLÉE, *pā-lā'*, ISLAND: largest of the numerous islands in Lake Erie; about 6 m. n. of the group in Put-in-bay. It belongs to Canada. Its greatest length is from n. to s. nearly 9 m., greatest width 4 m.; 13,000 acres. A large proportion of the land requires draining to fit it for cultivation, but there are considerable areas given to the grape, which thrives and is a source of profit. There is some timber; and large quantities of fine sand for mortar are sold in the large towns and cities bordering the lake. Limestone is quarried. There is considerable game, including deer, wild turkeys, and quail. The island has obtained quite a reputation as a summer resort, and is increasingly popular. It was settled by white men in 1834, and the descendants of the family which then secured a title from the Indians control most of the land. Viticulture began about 1863, and in recent years large quantities of wine have been produced.

PELERINE, n. *pəl'ēr-in* or *-ēn* [F. *pèlerine*, a tippet]: a lady's long cape with ends coming down to a point.

PELE'S HAIR, n. *pē'lēz*: a fine glassy hair-like substance found in the Sandwich Islands, blown from the liquid lava jets of the volcano Kilauea—so called from *Pele*, the goddess of this volcanic mountain.

## PELEW—PELICAN.

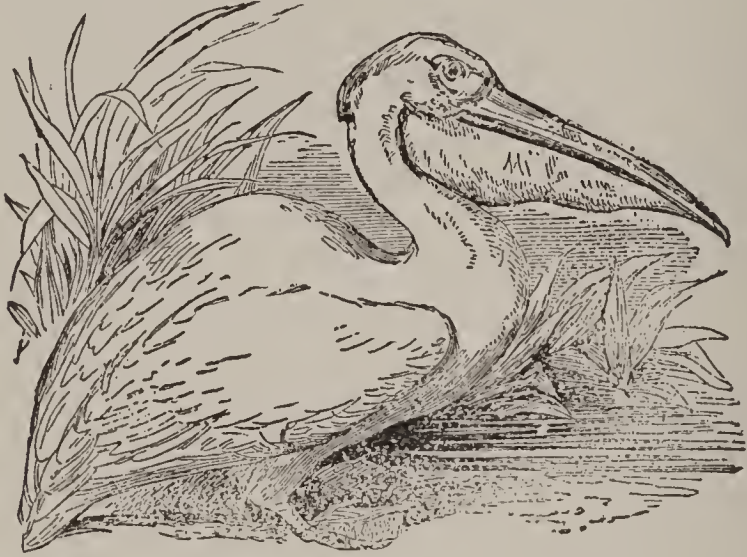
**PELEW**, *pē-lū'* (or **PALAU**, *pâ-loú*) **ISLANDS**: group of about 26 islands in the n. Pacific Ocean, formerly belonging to Spain, 450 m. e. of the Philippines, lat 7°—8° 30' n., long. 134°—136° e., at the w. extremity of the Caroline Archipelago. The islands are mostly coral and uninhabited, and which form a chain extending about 120 m. from s.s.w. to n.n.e. The principal island is Babelthuap, 28 m. by 14, containing a mountain whose summit gives a view of the whole group. As seen from the sea, the islands appear mountainous and rugged; but the soil is rich and fertile, and water is abundant. bread-fruit, cocoa-nuts, bananas, sugar-cane, lemons, oranges, and other tropical trees and fruits, are on the coasts. The inhabitants are of Malay race. They show considerable ingenuity in building their canoes, are active agriculturists, and have exceedingly primitive notions regarding dress, as the men go entirely naked, and the women nearly so. In 1783, the *Antelope* was wrecked upon the P. I., and the crew were treated by the natives with the greatest kindness. In 1899 Spain sold to Germany the Caroline, Pelew, and all of the Marianne or Ladrone Islands (excepting Guam, the largest, ceded to the United States in 1898) and constituted the groups the German New Guinea Protectorate. The Pelew islands are said to have been discovered by the Spaniards 1545.

**PELF**, n. *pělf* [OF. *pelfre*, goods, especially those obtained by plundering; *pelfrer*, to plunder: perhaps connected with L. *pilare*, to rob]: money; riches; wealth, generally in an ill sense.

**PELICAN**, n. *pěl'î-kăn* [F. *pélican*—from mid. L. *pelicānus*—from Gr. *pelēkan*—from *peleka'ō*, I hew with an ax, I peck], (*Pelecanus*): genus of birds of family *Pelecanidae* (q.v.), having a very long, large flattened bill, the upper mandible terminated by a strong hook, which curves over the tip of the lower one; beneath the lower mandible, which is composed of two flexible bony branches meeting at the tip, a great pouch of naked skin is appended; the tongue is very short, and almost rudimentary; the face and throat are naked; the wings of moderate length, the tail is rounded. The species are widely distributed, frequenting the shores of the sea, lakes, and rivers, and feeding chiefly on fish. Although birds of powerful wing, they are seldom seen at a great distance from land. All are birds of large size. They take their prey by hovering over the water, and p'unging upon it when it appears. They fly often in large flocks, and the sudden swoop of a flock of pelicans at a shoal of fish is a striking and beautiful sight. They store up their prey in their pouch, from which they bring it out at leisure, either for their own eating, or to feed their young. The pouch is capable of being wrinkled up into small size, and of being greatly distended.—The **COMMON P.** (*P. onocrotalus*) is as large as a swan, white, slightly tinged with flesh color; and in old birds, the breast golden yellow. The quill-feathers are black, but are scarcely seen except when the wings are expanded. It is a native of eastern parts of Europe, and of many parts of Asia and Africa; and fre-

## PELION—PELISSE.

quents the sea-coast, also rivers and lakes. It makes a nest of grass on the ground in some retired spot near the water, often on an island, and lays two or three white eggs. The parents are said to carry to their young water as well as food, in their pouch. During the night, the P. sits with its bill resting on its breast. The nail or hook which ter-



Pelican (*Pelecanus onocrotalus*).

minates the bill is red, and Mr. Broderip supposes that the ancient fable of the P. feeding its young with blood from its own breast has originated from its habit of pressing the bill upon the breast, in order the more easily to empty the pouch, when the red tip might be mistaken for blood.—

The RUFIOUS-NECKED P. (*P. fuscus*) abounds in the W. Indies and in many parts of America. Other species are found in other parts of the world, and in some places the number of pelicans is prodigious, particularly in some of the most southern parts of the world.

In heraldry, the P. is drawn with her wings endorsed, and wounding her breast with her beak. When represented in her nest feeding her young with her blood, she is called a pelican *in her piety*.



Pelican, in Heraldry.

PELION, *pě'li-on*: ancient name of a wooded mountain range in Thessaly, along the e. coast. Its e. side descends in steep and rugged precipices to the sea. Further n., near the mouth of the Peneus, is the steep conical peak of Ossa (q.v.), which, according to the classic myth, the Titans placed upon the summit of P., in order to scale Olympus, the abode of the gods. The modern name is Zagorá, and as of old, its sides and summit are clothed with venerable forests of oak, chestnut, beech, elm, and pine.

PELISSE, n. *pě-lî's'* [F. *pelisse*—from mid. L. and It. *pelliciã*—from L. *pellis*, a skin]: a robe made of fur; a furred robe for men; a dress or habit opening in front, worn by ladies.

## PELISSIER—PELLA.

PELISSIER, *pā-le-se-ā'*, JEAN JACQUES AMABLE, Marshal of France, Duc de Malakhoff: 1794, Nov. 6—1864, May 22; b. Maromme, near Rouen. His father was a small farmer, little above the degree of a peasant. P. studied at the Lyceum at Brussels. At the age of 20 he gained admission to the celebrated French artillery college of La Flèche, and was soon transferred to the special school of St. Cyr. He entered the artillery of the Royal Guard as sub-lieut. 1814, and being transferred to the 57th regt. of the line, which was not called upon to do duty after the return of Napoleon from Elba, he escaped the dilemma of declaring either for or against the emperor. He served on the staff in Spain 1823; made the campaign of the Morea 1828; joined the first expedition to Algiers 1830 as major of cavalry; and 1839 returned to Algeria with the rank of lieutenant-col. He commanded the left wing of the French army at the battle of Isly. In 1845 he acquired unenviable notoriety by suffocating more than 500 Arabs who took refuge in the caves of Ouled-Riah in the Dahra. Marshal Soult, then minister of war, did not venture to approve this atrocity, but Marshal Bugeaud, commander-in chief in Algeria, declared that P. only carried out his positive orders. By 1850 he had attained the rank of gen. of division. When the news of the *coup d'état* reached Algiers, he espoused the cause of the emperor, and placed the province of Algiers under martial law until order was restored. In the war with Russia, he obtained 1855 the command of the first corps of the Crimean army, and soon succeeded Marshal Canrobert in chief command, when a change came over the fortunes of the campaign. The Russians were defeated on the Tchernaya; and Sep. 8, the Malakhoff, the key of Sebastopol, was carried. After the fall of Sebastopol, P. received a marshal's baton, and on his return to France was created Duc de Malakhoff and a senator, and received a dotation of 100,000 francs. He received also the order of a G.C.B. from Queen Victoria. In 1858 he came to London as the French ambassador, but resigned his post, for which he had little relish, in the following year. He was then named gov.gen. of Algeria, where he died of congestion of the lungs.

PELL, n. *pěl* [OF. *pel*, a skin—from L. *pellis*, a skin: It. *pelle*]: a skin or hide; a parchment roll. CLERK OF THE PELLs, *formerly*, an officer of the exchequer who entered every teller's bill into a parchment roll.

PELLA, *pěl'lá*: ancient capital of Macedonia, birthplace of Alexander the Great; on a hill, surrounded by marshes. It was a wealthy and powerful city, but declined under the Romans until it became a place of no consequence, and in the middle ages there remained only a strong castle called *Bodena*. Its site has been identified with that of the village of *Neokhori*, or *Yenikiuy*, near which is a spring called *Pelle*.

## PELLAGRA—PELLICLE.

**PELLAGRA**, n. *pěl-lā'gră* [L. *pellis*, the skin; Gr. *agra*, a catching]: formerly the name of a loathsome skin-disease, supposed to be endemic to the rice-producing part of n. Italy, and called Italian leprosy; now designating a group of phenomena, of which the most prominent and significant are mental. Allied affections have recently been described in various continental countries; but as presented in its most intense form in Lombardy, P. consists in the skin being covered with tubercles and rough scales, in debility, vertigo, inability to preserve the equilibrium, epilepsy, and great depression of spirits. The melancholia which constituted the latter stage often led to suicide, and so frequently to destruction by drowning, that it was distinguished as a special form of the tenacy by the appellation of Hydro-mania. The extent of the ravages of this affection may be estimated from the facts, that of 500 patients in the Milan Lunatic Asylum 1827, one-third were pellagrins; that when Strambio wrote (1784), one of every 20, and when Holland (1817), one of every five or six of the population, presented symptoms of the disease. The belief, long current, that this malady was the result of the use of rice or maize as the chief article of diet, must now be greatly modified, as it has been observed in districts and under circumstances where the food is quite different; but where poverty, insufficient nourishment, filth, toil, and the ordinary agents in human degeneration are at work.

**PELLESTRINA**, *pěl-lēs-trē'nā*: town of n. Italy, in Venetia, near the centre of the island of P., 12 m. s. of Venice. Pop. 7,500.

**PELLET**, n. *pěl'lět* [F. *pelote*, a small hand-ball—from It. *pillotta*—from L. *pīla*, a ball: W. *pel*, a ball]: a little ball: V. in *OE.*, to form into little balls. **PEL'LETING**, imp. **PELLETED**, pp. *pěl lēt-ēd*: **ADJ.** consisting of little balls.

**PEL'LET**, or **O'GRESS**, in English Heraldry: a Roundle (q v.) sable.

**PELLICANUS**, *pěl-lī-kā'nūs*, **CONRAD**: 1478–1556; b. Alsace. His parents were poor, and his education was obtained with great difficulty. After acquiring some knowledge of Latin he taught in a convent school with no pay except the privilege of taking books from its library. An uncle who kept him 16 months at the Univ. at Heidelberg, changed his name from Kürsner to Pellicanus. He joined the Franciscans, but later became a Protestant. He studied Hebrew at Tübingen without a teacher, and 1501 wrote the first Hebrew grammar which appeared in a European tongue. After the change in his religious views he was called to Zürich as prof. of Hebrew, and remained there till his death. He pub. a commentary on the Bible, 7 vols., and left his autobiography in Latin.

**PELLICLE**, n. *pěl'lī-kl* [F. *pellicule*—from L. *pellic'ula*, a small skin—from *pellis*, skin]: a thin skin or film; a fine film or crust which forms on a liquid mixture during evaporation; in *bot.*, an extremely delicate superficial membrane or skin. **PELLICULAR**, a. *pěl-līk'ū-lēr*, relating to or connected with a pellicle.

PELLICO—PELLITORY.

PELLICO, *pěllē-kō*, SILVIO: Italian poet, noted for his long and cruel imprisonment by the Austrians, more, perhaps, than for his verses: 1788, June 24—1854, Jan. 31; b. Saluzzo, in Piedmont. He was educated in Pignerol, where his father, Onorato P., also favorably known as a lyric poet, had a silk-factory. In his 16th year, P. accompanied his sister Rosina (on her marriage) to Lyon, where he remained until Foscolo's *Carme de' Sepolcri* awakened in him a strong patriotic feeling and an irresistible desire to return to Italy. Coming, about 1810, to Milan where his family were then settled, he was warmly received by Ugo Foscolo and Vincenzo Monti, and was employed as tutor in the family of Count Porro, in whose house all the most distinguished men in Milan were accustomed to meet. His tragedies of *Laodamia* and *Francesca da Rimini* gained him an honorable name among Italian poets. He also translated the *Manfred* of Byron, with whom he had become acquainted. He lived in great intimacy with the most eminent patriots and authors of liberal views, and took active part in a periodical called *Il Conciliatore*, which after a time was suppressed on account of its liberal tone. Having become connected with the secret soc. of the Carbonari, then the dread of the Italian govt., P. was apprehended 1820, and sent to the prison of Sta. Margherita, where his friend the poet Maroncelli also was confined. In the beginning of the following year, he was carried to Venice, and 1822, Jan., to the prison on the isle of San Michele, near Venice; and Maroncelli and he were at last condemned to death; but the emperor commuted the sentence to 20 years imprisonment for Maroncelli, and 15 years for Pellico. 1822, Mar., they both were conveyed to the subterranean dungeons of the Spielberg. 1830, Aug., however, they were set at liberty. P. published an account of his sufferings during his ten years' imprisonment, under the title *Le mie Prigioni* (Paris 1833), which has been translated into other languages, and has made his name familiar. P.'s health, never robust, was permanently injured. The Marchioness of Barolo received him into her house at Turin as her secretary. P. subsequently published numerous tragedies and other poems, and a little catechism on the duties of man.

PELLITORY, n. *pěllī-tēr-ī* [Sp. *pelitre*, pellitory of Spain: OF. *paritoire*—from L. *pariētāriā*, the pellitory or wall-plant—from *pariēs*, a wall]: a name applied to several plants, sometimes used in medicine.

PELLITORY, or PELLITORY OF THE WALL (*Parietaria*): genus of plants of nat. order *Urticeæ*, having both unisexual and hermaphrodite flowers on the same plant, the perianth of both kinds 4-fid. The COMMON P. (*P. officinalis*), which grows on old walls and heaps of rubbish in many parts of Europe and Asia, is a herbaceous perennial with prostrate branched stems, more rarely with erect stems, ovate leaves, and inconspicuous flowers. It sometimes attracts attention from the manner in which the pollen is copiously discharged in hot summer days by an elastic movement of the filaments. It was for

## PELLITORY.

merly much esteemed as a diuretic, refrigerant, and lithon-  
triptic. Its properties depend on nitre, which it contains.

PELLITORY OF SPAIN (*Anacyclus pyrethrum*): plant of  
nat. order *Compositæ*, of a genus nearly allied to Chamomile  
(q.v.), native of the Levant and of Barbary, and cultivated  
to some extent in Germany and other countries. It has  
procumbent, branched, downy stems; each branch one-flow-  
ered; the root-leaves pinnate, with pinnatifid segments and  
linear-subulate lobes. The flowers (heads of flowers) have  
a white ray, purplish beneath, and a yellow disk. The root  
is spindle-shaped and fleshy, and when dried is about the  
thickness of the little finger, inodorous, breaking with a  
resinous fracture. It has a very peculiar taste, slight at  
first, but becoming acidulous, saline, and acrid, with a burn-



Pellitory (*Parietaria officinalis*).

ing and tingling sensation in the mouth and throat, which  
continues for some time. It is valued in medicine, and is  
chewed or administered in the form of a tincture to relieve  
toothache, also in cases of paralysis of the tongue, as a  
sialogogue in certain kinds of headache, and of rheumatic  
and neuralgic affections of the face, and is used as a gargle  
in relaxation of the uvula. The powder of it enters into the  
composition of certain cephalic snuffs, and is rubbed on the  
skin in some eastern countries to promote perspiration. It  
is the *Radix pyrethri* of the pharmacopœias. It is a power-  
ful local irritant. The plant cultivated in Germany has  
more slender roots than that of the Levant, and has some-  
times been described as a distinct species (*A. officinarum*),  
but is probably a mere variety.



## PELL MELL—PELOPONNESIAN.

PELL MELL, ad. *pəl'məl'* [F. *pèle-mêle*; OF. *pesle-mêler*, confusedly—from F. *pelle*, a shovel; *mêler*, OF. *mesier*, to mix—*lit.*, to move or mix with a shovel]: with confusion, hurry, and violence; all in a heap.

PELLS, *pəlz*, CLERK OF THE [Lat. *pellis*, a skin]: clerk belonging to the court of exchequer in England and Ireland, whose office was to enter every teller's bill into a parchment or skin, called *pellis receptorum*, and also to make another roll of payments, *pellis exituum*, which showed the warrant under which the money was paid. The office was abolished 1834.

PELLUCID, a. *pəl-lō'sid* [F. *pellucide*—from L. *pellucidus*, transparent; *per*, through; *lucidus*, shining—from *lux*, light: It. *pellucido*]: transparent; perfectly clear. PELLUCIDLY, ad. *-li*. PELLUCIDNESS, n. *-nēs*, or PELLUCID'ITY, n. *-i-ti*, perfect clearness; transparency.

PELOPIDAS: *pē-lōp'ī-das*. Theban general, of noble descent; noted among his fellow-citizens for his disinterested patriotism; d. B. C. 364. The inviolable friendship between himself—one of the richest men in Thebes—and Epaminondas—one of the poorest—is among the most beautiful things in Greek history. B. C. 382 he was driven from Thebes by the oligarchic party, who were supported by the Spartans, and was forced to seek refuge at Athens, whence he returned secretly with a few associates B. C. 379, and recovered possession of the Kadmeia, or citadel, slaying the Spartan leader, Leontiades, with his own hand. Plutarch gives a vivid picture of the adventurous exiles gliding quietly in disguise into the city on a winter afternoon, amid bitter wind and sleet. Having been elected Bœotarch, in conjunction with Melon and Charon, he set about training and disciplining his troops, so that they soon became as formidable as the Lacedæmonians, and were successful in several small encounters with the latter. His 'sacred band' of Theban youth largely contributed to the victory of Epaminondas at Leuctra B. C. 371, but failed in a subsequent attack on Sparta itself. In the expedition of the Thebans against the cruel tyrant, Alexander of Pheræ B. C. 368, he was, after several important successes, treacherously taken prisoner when in the character of an ambassador; but was rescued by Epaminondas in the expedition of the following year. He was then sent to Susa, as ambassador from Thebes, to counteract the Spartan and Athenian intrigues at the court of Persia, and conducted himself nobly there. His diplomacy was successful. B. C. 364, a third expedition was planned against Alexander of Pheræ, who, as usual, was threatening the Thessalian towns. The command was given to P., and in the summer he marched into Thessaly, where he won the battle of Kynoskephalæ, but was killed while too eagerly pursuing the foe. He was buried by the Thessalians with great pomp.

PELOPONNESIAN, a. *pəl'ō-pōn-nē'shan* [Gr. *Pelops*, Pelops; *nēsos*, an island]: of or relating to Peloponnesus or Morea, in Greece: N. & native of Peloponnesus. PELOPONNESIAN WAR (see GREECE).

## PELOPONNESUS--PELOUSE.

PELOPONNESUS, *pěł-ō-pōn-nē'sūs* (i.e., the isle of Pelops), now called the MOREA (q.v.): peninsula, which formed the s. part of anc. Greece—Hellas Proper being situated northward of the isthmus on which stood the city of Corinth: see GREECE. Area, less than 9,000 sq. m. In the most flourishing periods of Grecian history the P. had a pop. of more than 2,000,000: present pop. little more than 500,000. Among its most important cities were Sparta in Laconia, and Argos, cap. of Argolis. Sparta acquired, after the Messenian War, a decided supremacy over the other states, and disputed the supremacy with Athens in a war of almost 30 years duration B.C. 431–404—the famous 'Peloponnesian War,' of which the history has been written by Thucydides. After the Roman conquest, the P. formed part of the province of Achaia, and subsequently belonged to the Byzantine empire. For its later history, see MOREA.

PELOPS, *pě'łōps*, in Greek Mythology: grandson of Zeus and son of Tantalus; slain by his father, and served up at an entertainment which he gave to the gods, in order to test their omniscience. They were not deceived, and would not touch the horrible food; but Ceres, being absorbed with grief for the loss of her daughter, ate part of a shoulder without observing. The gods then commanded the members to be thrown into a cauldron, out of which Clotho brought the boy again alive, and the want of the shoulder was supplied by an ivory one.—According to the legend most general in later times, P. was a Phrygian, who, being driven by Ilos from Sipylos, came with great treasures to the peninsula—which derived from him the name Peloponnesus, married Hippodamia, obtained her father's kingdom by conquering him in a chariot-race, and became the father of Atreus, Thyestes, and other sons. But in what appear to be the oldest traditions, he is represented as a Greek, and not as a foreigner. He was said to have revived the Olympic games, and was honored particularly at Olympia.

PELORIA, n. *pě-lō'rĭ-ă* [Gr. *pelōr*, a monster]: in bot., a form assumed by certain flowers, which, being unsymmetrical in their usual state, become symmetrical, in what may be considered as a return to their normal type, as when *Linārĭă* in place of one spur produces five. PELORIZATION, n. *pě'ł-ō-rĭ-ză'shŭn*, the act or process of the reversion of a flower usually irregular to the regular form.

PELOUSE, *pěh-lōz'*, LEON GERMAIN: French painter: b. about 1840, at Pierrelaye, Seine-et-Oise. He exhibited the first time 1865. His *A Corner of Cernay in January* was bought by the govt. and is in the Luxembourg gallery; *Evening at the Farm*, in the Musée of Grenoble, etc. At the expositions of 1873, 76, and 89, he received 1st and 2nd class medals, and was made chevalier of the Legion of Honor 1878. A French critic says that his pictures are full of the grand sentiment of nature; can be characterized only in poetry of the heart, expressed in Alexandrines; and are comparable with the works of Rousseau, Diaz, Millet, and Corot.

## PELOUZE—PELT.

**PELOUZE'**, THÉOPHILE JULES: French chemist: 1807-67; b. Valognes, Manche. He came to Paris 1827, entering the laboratory of Gay-Lussac; was prof. of chem. at Lille 1830, but the next year returned, and was tutor of chem. in the polytechnic school, and assayer; 1836 he was with Liebig, making researches in organic chem.; 1837, asst. of Thénard of the Coll. of France, and succeeded him the same year, serving till 1851; then commissioner of the mint and member of the municipal council, after which he continued to direct a laboratory school that he had founded 1846. He published a great many memoirs; also, with Frémy, a general analytic chem., 6 vols., 3 editions (1853-60), abridged in 3 vols. Besides his discoveries of new acids and salts, he improved processes of tanning, glass-making, etc.; identified beet-sugar with cane-sugar; with Liebig, discovered cœnanthic ether; invented artificial avanturine; was the first in France to prepare gun-cotton; and with M. Genlis first produced synthetically a fatty body from glycerine and an acid. He died in Paris.

**PELT**, v. *pèlt* [Sp. *pelotear*, to throw snow-balls at each other, to quarrel: F. *peloter*, to toss like a ball—from *pelote*, a ball: W. *pel*, a ball: perhaps connected with L. *vello*. I drive]: to use like a pellet; to assail or attack with something thrown or driven; to throw at; in *OE.*, to be in a rage: N. a blow or stroke from something thrown; in *OE.*, rage; passion. **PELTING**, imp.: N. an assault with some violence by something thrown. **PELT'ED**, pp. **PELT'ER**, n. *-ér*, one who pelts.

**PELT**, n. *pèlt* [L. *pelta*, a shield or target]: a kind of buckler. **PELTA**, n. *pèl'tá*, a buckler; in *bot.*, a flat shield without a rim; a metal toe-piece for a boot or shoe. **PEL'TATE**, a. *-tát*, in *bot.*, resembling a round shield; fixed to the stalk by a point within the margin. **PEL'TATELY**, ad. *-lí*. **PELTATE-HAIRS**, in *bot.*, hairs that are attached by their middle. **PELTATE-NERVED**, a. in *bot.*, applied to a leaf the nerves of which radiate from the centre.

**PELT**, n. *pèlt* [Ger. *pelz*, fur, a hide: F. *pelletier*, a furrier; *pelleterie*, the shop or trade of a peltmonger—from OF. *pel*, a skin—from L. *pellis*, a skin: comp. Gael. *peall*, skin]: a raw hide; the skin of a beast with the hair attached; the quarry of a hawk all torn. **PELTMONGER**, n. *-müng'gér* [see **MONGER**]: a dealer in pelts or raw hides. **PELTRY**, n. *pèl'trĩ*, fur-skins of wild animals as received from the hunters; fur-skins in general. It is understood to mean only skins undressed, except by drying, and chiefly those which, when dressed, are called furs; and it has been applied especially to the product of the N.W. Territory (Hudson's Bay Territory) of Brit. N. America; though all others are now included.

The pelts of many animals in their original state do not appear well fitted for decorative or even ordinary apparel, but the art of the furrier changes them greatly. The discovery that the long hairs which project over the fine under-fur of many species are also deeper rooted in the skin, has given rise to an easy and admirable method of remov-

## PELT.

ing them completely. The pelts are stretched and passed through a paring-machine, which pares the flesh side with such nicety that it takes off a thin layer, and cuts only through the roots of the coarse, deep-seated hairs, which are consequently easily shaken or brushed out. In this way, and by dyeing the fur, excellent imitations of the costly seal-skins, etc., are prepared from musquash, hare, and other common pelts. See FUR.

The most important of the marine fur-bearing animals are the Alaskan fur seals and the sea otter.—*Seals* (see SEAL, *Phoca*). Of the many varieties in various oceans, the fur seal of Alaska holds the highest place in the commercial world; and since the acquisition of Alaska by the United States, the controlling and protection of the seal fisheries has become a national concern. The superior quality of the fur, and the readiness with which countless numbers of the animal can be secured, has caused grave fears lest the animal suffer extermination, and congressional action is constantly stirred regarding the matter. The method of preparation of the skin is as follows: On being removed from the body it is first salted by sprinkling salt abundantly on the flesh side, when after about three weeks of this procedure as a 'pickling' process, the skins are tied up in bundles of two, and are ready for shipment from the catching-grounds. The Alaskan Commercial Company are permitted to take 100,000 seals a year. 1870-81 this company paid into the treasury of the United States \$2,896,927.75 as a special tax; to which was added a rental of \$555,480.75, giving a total of income during that time of \$3,452,408.50 to the national treasury. The great mass of seal pelts are taken to England, the cost of dressing them being there much less than in the United States. In Newfoundland and along the contiguous coasts the seals are denominated 'hair seals.' Their skins are used principally for making fancy patent leather, for trunk covers, harness work, and to some extent as a 'trimming' for various kinds of manufactures, coats and cloaks included. In 1890 the catch was 500,000, and in some previous seasons it has amounted to 650,000. By the laws of Newfoundland sealing vessels are not permitted to begin their voyages until March 1, and steamers not before March 10.—The *Sea Otter* is a very large animal, with soft, black fur. Many of the longer hairs are tipped with white, and add greatly to the beauty of the fur. The pelt in general is of oval form, about six feet in length, with a breadth of nearly four feet. The animal seldom visits the land except to bring forth its young. It sleeps on the surface of the water, floating on its back. The Alaskan natives are its principal hunters, going out in large numbers when the weather is favorable. Arriving at the rendezvous, often out of sight of land, they form in a straight line, abreast, and move slowly forward, paddling softly so as to make no disturbance. When the nose of an otter is seen, the Aleut throws his dart (of late years superseded by the rifle), and every one of his companions is ready for the second appearance of the otter. When the animal,

## PELT.

worn out by repeated divings, lies exhausted on the surface of the water, he becomes an easy prey. The tails are cut off and sold separately from the skins; and in the past, strangely, there was always a large difference between the number of tails and the number of skins sold to the Russian American Company (now out of existence), though the Aleuts were forced by the company to sell to it all the fur, whether skins or tails. The animal was formerly abundant on the Pacific coast as far as the coast of Lower California, and the skins were worth from \$200 to \$500 each. The peculiar fancy that once existed for them has greatly declined, and they form a much smaller item in the list of peltries than formerly; the number of otter skins annually sent to the world's market rarely reaches 6,000.

The Hudson's Bay Company carries on a business entirely disconnected with any other company. They hold two great sales every year in London, at which the year's product is disposed of. The following table shows the enormous quantity of pelts and peltry sold by the company for 1872; also for 1889 (sales 1890, Jan. and Mar.).

Animal.	1872.	1889.
Beaver.....	903,371	74,173
Otter.....	13,781	8,459
Sea Otter.....	59	.....
Fur Seal.....	10,796	.....
“ “ salted.....	1,029	721
Hair Seal.....	3,118	637
Musquash.....	124,563	209,605
Fox, Silver.....	540	608
“ Cross.....	2,027	2,662
“ Red.....	7,699	14,269
“ White.....	2,804	9,433
“ Blue.....	36	.....
“ Kitt.....	3,792	81
Fisher.....	7,059	5,195
Marten.....	59,107	56,614
Mink.....	39,226	42,532
Ermine.....	2,958	.....
Skunk.....	2,621	11,169
Wolverine.....	1,656	1,343
Lynx.....	7,926	33,358
Wolf.....	2,790	3,249
Raccoon.....	3,878	210
Badger.....	1,862	743
Bear.....	8,415	8,369
American Rabbit.....	3,070	137,828
Musk Ox.....	44	367
American Deer.....	9,032	.....
American Goat.....	188	.....
Squirrel.....	643	.....
Weenusk.....	130	.....
Hare.....	126	.....
Panther.....	5	.....
Swan.....	317	.....
Loon.....	12	.....
Dry Hair Seals.....	.....	1,109

One of the silver-fox skins listed above (1872) was of such rare quality that it brought a price of £60.—See FUR: SEAL; OTTER: ETC.

## PELTING—PELVIMETER.

The American pelts sold in London during 1889 are given in the following table:

Raccoon.....	485,000	White Fox.....	2,000
Gray Fox.....	24,000	Silver Fox.....	1,100
Opossum.....	221,000	Otter....	7,700
Lynx.....	3,300	Wolverine.....	1,000
Cross Fox.....	3,400	Grizzly Bear.....	1,000
Fisher.....	4,200	Skunk.....	465,000
Red Fox.....	66,000	Squirrel.....	50,000
Brown Bear.....	800	Marten.....	29,300
Salted Fur Skins.....	47,350	Wolf.....	7,500
Musquash.....	1,112,000	Blue Fox.....	2,600
Beaver.....	17,700	Sea Otter.....	3,300
Mink.....	106,000	Black Bear.....	6,000

**PELTING**, a. *pělt'ing* [see **PELT** 1]: in *OE.*, paltry.

**PELTRY**: see under **PELT** 3.

**PELUSIUM**, *pē-lū'zī-ŭm*: Greek name of an anc. Egyptian city, at the n.e. angle of the Delta of the Nile; important as the key of Egypt on the Asiatic side. The e. mouth of the Nile derived from it the epithet Pelusian (*Ostium Pelusiacum*). P. is called *Sin* in the Old Test.; and both words, as well as the native Coptic or Egyptian name *Pere-moun*, or *Peromi*, signify the mud-city. The *Ostium Pelusiacum* was choked with sand as long ago as B.C. 1st c., and its distance from the sea has ever since been increasing. P. appears to have originally borne the name Anaris, or Abaris: it is so called by Manetho, who attributes its foundation to the Hyksos about B.C. 2,000; but it figures in semi-authentic history first as the scene of Sennacherib's defeat, when (according to the Egyptian tradition, reported by Herodotus) the camp of the Assyrians was invaded at night by a host of field-mice, who gnawed their bowstrings and shield-straps, so that in the morning, when the Egyptians fell upon them, they were defenseless. For the Hebrew account of Sennacherib's defeat see II Kings, xviii. xix. B.C. 525, Cambyses overthrew, near P., the forces of Pharaoh-Psammetichus. The city was taken also by the Persians B.C. 309; and in B.C. 173, it was the scene of the defeat of Ptolemy Philometor by Antiochus Epiphanes. Mark Antony captured it B.C. 55, and it opened its gates to Octavian after his victory at Actium B.C. 31. Its later history is unimportant, and its ruins—at *Tineh*, near Damietta—possess little interest.

**PELVIMETER**, n. *pěl-vīm'ě-tēr* [L. *pelvis*, a basin; Gr. *metron*, a measure]: an instrument for measuring the dimensions of the pelvis.

## PELVIS.

PELVIS, n. *pělv'is* [L. *pelvis*, à basin: Gr. *pella*, a dish or bowl]: the bony cavity forming the lower part of the abdomen, containing several of the internal organs. PELVIC, a. *pělv'ik*; of or relating to the pelvis.—The *Pelvis* is a bony ring interposed between the spinal column and the lower extremities, so as to transmit the weight of the former to the latter. Before considering the P. as a whole, it is expedient to consider the individual bones of which it is composed. These, in the adult, are four in number, viz., the two *ossa innominata*, which constitute its sides and front, and the sacrum and coccyx, which complete it behind. The *os innominatum* receives its name from its bearing no resemblance to any known body, and is a large irregular shaped bone. In the young subject, it consists of three separate bones, which meet and form the deep, cup-shaped cavity (the *acetabulum*) a little below the middle of the outside of the bone, and in which the head of the thigh-bone rests. Hence it is usual to describe this bone as consisting of the ilium, the ischium, and the pubes. The *ilium* is the superior, broad, and expanded portion which forms the prominence of the hip, and articulates with the sacrum. This bone may be described as divisible into an external and an internal surface, a crest, and an anterior and posterior border. The external surface (see fig. I.) is convex in front and concave behind; it is bounded above by the crest, below by the upper border of the acetabulum (see fig. II.), and in front and behind by the anterior and posterior borders. It presents various curved lines and rough surfaces, for the attachment of the *glutæi* and other powerful muscles connecting the pelvis and the lower extremities. The internal surface, which is smooth and concave, has the same boundaries as the external, except inferiorly, where it terminates in a prominent line, termed the *linea ilio-pectinea*. The surface of the crest is convex, roughened, and sufficiently broad to admit of the attachment of three planes of muscles. The borders are shown in fig. I. The *ischium* is the inferior and strongest portion of the bone. It consists of a thick and solid portion, the *body* (whose inferior body is termed the *tuberosity*), and a thin ascending portion, the *ramus*. In the ordinary sitting position, the whole weight of the body rests on the ischium; and by sitting on the hands, we can usually feel the part (the *tuberosity*, see fig. I. 15) through which the weight is transmitted. The *pubes* is that portion which runs horizontally inward from the inner side of the acetabulum for about two inches, then descends obliquely outward for about the same length, thus making an acute angle with its original direction. The former part is called the *body*, and the latter the *ramus*, of the pubes. The *ramus* is continuous with the *ramus* of the ischium. Between the ischium and pubes is a large aperture, known as the *thyroid* or *obturator foramen*, which in the living body is closed by a membrane termed the *obturator ligament*. The object of this large foramen is probably to give lightness to the parts, without materially diminishing their strength.

The development of the *os innominatum* affords an excel-

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lent example of the general principles laid down in the article OSSIFICATION. There are no less than *eight* centres of ossification for this bone: three primary—one for the ilium, one for the ischium, and one for the pubes—and five secondary ones for various processes, etc. The first centre appears in the lower part of the ilium, at about the same period that the development of the vertebræ commences, viz., at about the close of the second month of fetal life; the second in the body of the ischium, just below the acetabulum, at about the third month; and the third in the body of the pubes, near the acetabulum, during the

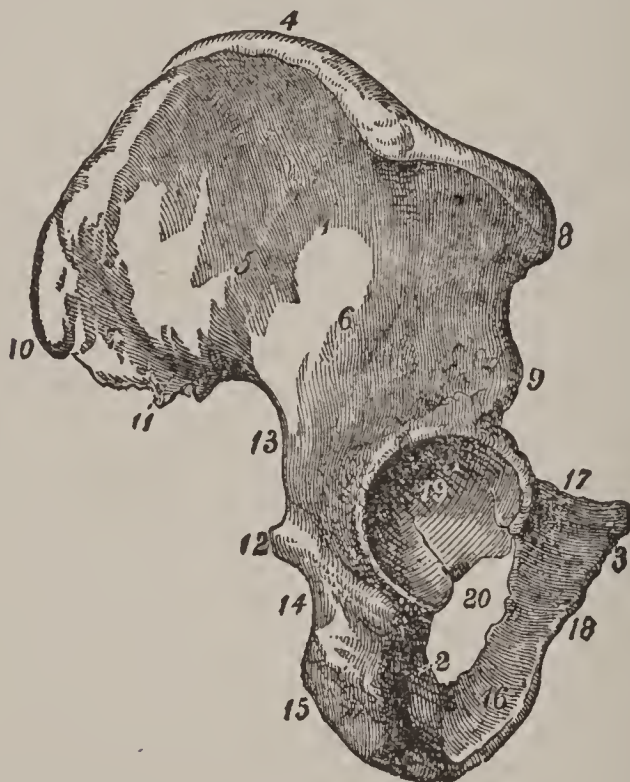


Fig. I.

The Os Innominatum of the right side.

1, the ilium, its external surface; 2, the ischium; 3, the os pubis; 4, the crest of the ilium; 5, 6, upper and lower curved lines for attachment of muscles; 7, the surface for attachment of the glutæus maximus; 8, 9, the anterior superior and inferior spinous processes; 10, 11, the posterior spinous processes; 12, the spine of the ischium; 13, 14, the greater and lesser sacro-ischiatic notches; 15, the tuberosity of the ischium; 16, its ramus; 17, the body of the os pubis; 18, its ramus; 19, the acetabulum; 20, the thyroid or obturator foramen.—(From Wilson.)

fourth or fifth month. At birth, the crest of the ilium, the bottom of the acetabulum, and the rami of the ischium and pubes, are still cartilaginous. At about the sixth or seventh year, these rami become completely ossified; next, the ilium is united to the ischium; and lastly, the pubes is joined to the other two in the acetabulum. The complete ossification of the bone, from the secondary centres in the crest of the ilium, the tuberosity of the ischium, etc., is not completed till about the 25th year.

Each os innominatum articulates with its fellow of the opposite side (through the intervention of the *interosseous fibro-cartilage*, which unites the two surfaces of the pubic



## PELVIS.

bones, see fig. II. *f*), with the sacrum, and with the femur (at the acetabulum). No less than 35 muscles are attached to this bone, some proceeding to the region of the back, others forming the walls of the abdomen, others forming the floor of the P., others passing downward to the lower

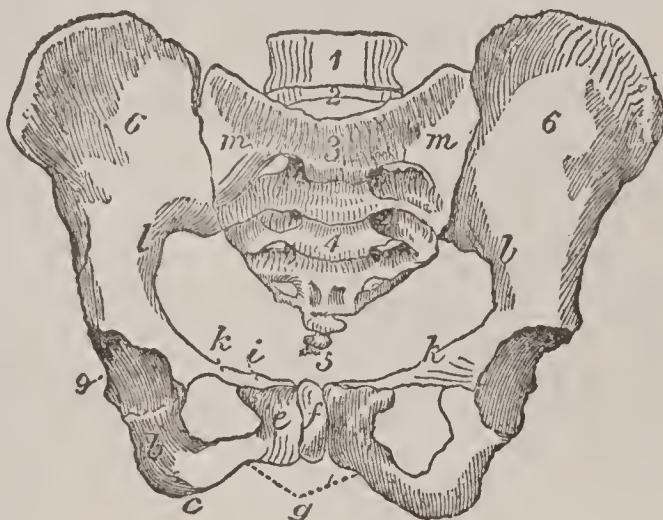


Fig. II.

Pelvis (with Fifth Lumbar Vertebra) of European Female Adult. Transverse diameter, 5·7; antero-posterior diameter, 4·5 inches.

1, the last lumbar vertebra; 2, the inter-vertebral substance connecting it with the sacrum; 3, the promontory of the sacrum; 4, its anterior surface; 5, the coccyx; 6, 6, the iliac fossæ; 9, the acetabulum; *c*, the tuberosity, and *b* the body, of the ischium; *e*, the os pubis; *f*, the symphysis pubis; *g*, the arch, *i*, the spine, and *k* the pectineal line of the pubis; *k*, *l*, *k*, *l*, the ileo-pectineal lines.—(From Humphry.)

extremities, etc. As the other bones entering into the formation of the P., the sacrum, and the coccyx, belong essentially to the vertebral column (see that title), it is sufficient here to remark that, collectively, they form a triangular bony mass (with the base upward, and with a concave anterior surface), which constitutes the posterior part of the pelvic ring. See fig. II. 4, 5.

The P., as a whole, is divisible into a false and true P. The *false pelvis* is all that expanded portion bounded laterally by the iliac bones, and lying above the prominent line termed the *linea ileo-pectinea* (see fig. II. *k*, *l*); while the *true pelvis* is all that part of the general pelvic cavity below that line. The broad, shallow cavity of the false P. serves to support the weight of the intestines; while the rectum, bladder, and part of the generative organs, lie in the cavity of the true P. The upper aperture of the true P. is termed the *inlet*. It is somewhat heart-shaped in form, and has three principal diameters—an *antero-posterior* (or sacro-pubic), which extends from the angle formed by the sacrum with the last lumbar vertebra, to the symphysis pubis, or point of union of the two pubic bones; the *transverse*, at right angles to the former, and extending across the greatest width of the P.; and the *oblique*, extending from the sacro-iliac symphysis (or union), on one side, to the margin of the brim corresponding with the acetabulum, on the other. The diameters of the outlet are two—an *antero-posterior*, extending from the tip of the coccyx to the lower part of

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the symphysis pubis; and a *transverse*, from the posterior part of one ischiatic tuberosity, to the same point on the opposite side. As the precise knowledge of the diameter and depth of the P. is of the greatest importance in the practice of midwifery, we give the average numbers representing the dimensions of a well-formed adult female P. *Diameters of inlet or brim*—antero-posterior, 4·4 inches; transverse, 5·4 inches; oblique, 4·8 inches. *Diameters of outlet*—antero-posterior, 5 inches; transverse, 4·3 inches. *Depth of the true pelvis*—posteriorly, 4·5 inches; in the middle, 3·5 inches; anteriorly, 1·5 inches.

The P. is placed obliquely with regard to the trunk of the body, the plane of the inlet to the true P. forming an angle of 60° to 65° with the horizon. According to Naegele (*Ueber das weibliche Becken*), the extremity of the coccyx is in the female, when standing upright, about seven lines higher than the lower edge of the symphysis pubis; the upper edge of the symphysis being at the same level as the lower edge of the second segment of the coccyx. By attention to these data, a detached P. may readily be placed at the angle at which it normally lies in the skeleton. The shape of the human P. is much affected by the curving forward of the lower part of the sacrum. This bend of the sacrum forward serves to support the viscera, when the body is in erect posture; but it is of much more importance in its relation to the act of parturition. If all the antero-posterior diameters of the true P. from the brim to the outlet were bisected, the points of bisection would form a curved line, similar to the curve of the sacrum, and termed the *axis* of the P. As the head of the child has to follow this curve, the difficulties of parturition are much greater than if the axis of the P. had been straight, as in the other vertebrata. Without entering into unnecessary details, we may remark generally, that the fetal head is of oval shape, with its greatest diameter from before backward, and that in its passage through the P. it is so placed that its longest diameter at each stage of labor coincides with the longest diameter of the P. The head enters the P. with the occiput (or back of the skull) directed toward one ilium, and the face toward the other; at its final emergence, the face is turned toward the sacrum and coccyx. There can be no doubt that the screw-like or rotatory motion which is thus given to the fetal head, renders its passage through the P. more easy than it would otherwise have been.

There are well-marked differences, chiefly having reference to the act of parturition, between the male and female P. In the female, the bones are lighter and more delicate than in the male, and the muscular impressions and eminences are less distinctly marked. The iliac fossæ are large and expanded; hence the great prominence of the hips. The several diameters (particularly the transverse diameter of the brim, which measures only 5·1 inches in the male) are somewhat greater; and the pubic arch is wider by about ten degrees; the sacrum also is wider and less curved.

It is worthy of notice that the P. of the negro is smaller

## PEMBA.

in all its dimensions

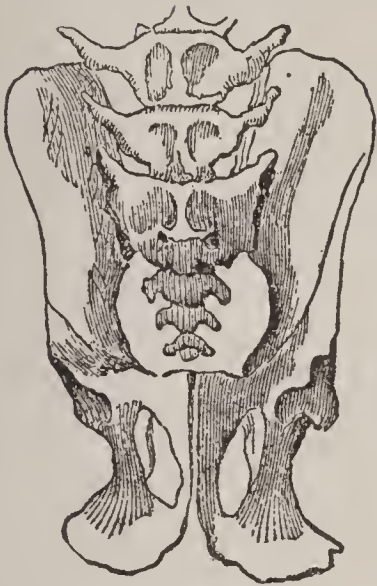


Fig. III.

Pelvis, with two Lumbar Vertebrae, of a large Monkey. Transverse diameter, 2 7/8, and antero-posterior diameter, 3 inches.— (From Humphry.)

than that of the European, and presents a partial approximation to that of the monkey (fig. III.), especially in the deficiency of its width. This difference is very much more obvious in the male than in the female negro; and parturition in the black races is facilitated both by the sacrum being less curved, and by the fetal head being of smaller dimensions. In the apes and monkeys, which approach most nearly to man, the P. is longer and narrower, and much less curved than in the human subject. In other mammals, the differences are for the most part the same in kind, but greater in degree. In many of the Cleioptera (bats) and Insectivora (as the mole), the pubic bones are connected only loosely by a small ligament, or there is a complete opening between the bones (as occurs normally in birds), an arrangement

by which the act of parturition in these animals is much facilitated. The pelvic bones are very simple in the Cetacea, in some cases being represented by two simple elongated bones lying near the anus, and converging from opposite sides (a transverse connecting piece being sometimes but not always present); in others, by a small V-shaped bone, while sometimes (as in *Manatus*) they seem entirely wanting. For the additional pelvic bones in the non-placental mammals, see MARSUPIATA: MONOTREMATA. In the echidna (belonging to the latter order), the acetabulum is perforated, as occurs normally in birds. In birds, in addition to the peculiarity above noticed, we find the P. open in front (or, more correctly, inferiorly), there being no union of the pubic bones in any bird except the ostrich. This normal incompleteness of the pelvic ring is obviously for the purpose of facilitating the passage of the eggs. It is unnecessary to trace the further degradation of the pelvic bones in the reptiles and fishes.

PEMBA, *pèm'ba*, called *Green Isle* by the Arabs: island about 20 m. off the e. coast of Africa, in the dominions of the Sultan of Zanzibar, lat. 5° s.; length about 38 m. It is an irregular coralline island, cut in every direction by creeks, formerly much frequented by craft engaged in the slave trade. The vegetation is most luxuriant, but P. is unhealthful. Pop. 40,000.

## PEMBERTON—PEMBROKE COLLEGE.

PEMBERTON, *pěm'běr-ton*, JOHN CLIFFORD: 1814 Aug. 10—1881, July 13; b. Philadelphia. He graduated from West Point 1837, served in the Seminole war, and was brevetted capt. and maj. for services in the Mexican war. He was promoted capt. 1850, was stationed at Fort Leavenworth during the Kansas troubles, and took part in the expedition to Utah 1858. He had married a Southern woman, and on the opening of the civil war he resigned from the army and entered the Confederate service. By various promotions he reached the rank of lieut.gen. He held many important positions, and was in command at Vicksburg when it was besieged by Gen. Grant. After the war he spent several years in Va., but returned to Penn. 1876. He died at Penllyn, near Philadelphia.

PEMBROKE, *pěm'brûk*: seaport of S. Wales; market-town, and municipal and parliamentary borough, in the county of P., on a rocky ridge on a navigable creek of Milford Haven, 7 m. s.e. of Milford. On the extremity of the ridge on which the town is built, are the remains of its anciently extensive castle, said to have been the birthplace of Henry VII. Beneath the ruins is a remarkable natural cavern, which had communications both with the castle and the harbor. In 1648 the castle was beleaguered by Cromwell, and taken after a siege of six weeks. The keep, the principal building in the inner court, is 75 ft. high, and 163 ft. in circumference; and is surmounted by a cone-shaped roof of masonry, still perfect. *Pater*, otherwise called Pembroke Dock, rather a ship building than a commercial centre, is 2 m. from the town, and has several building-slips and a dry-dock. The naval establishment of the govt. covers 80 acres, and is surrounded by a high wall, flanked by fortifications. Within P. are three ancient churches, and numerous ecclesiastical and educational institutions. Pop. (1891) parliamentary borough, 25,812; municipal borough, 14,978.

PEM'BROKE, EARLS OF: see HERBERT (Family).

PEM'BROKE COLLEGE. Cambridge: one of the colleges of Cambridge Univ., England, founded 1347 by Mary de St. Paul, widow of Aymer de Valence, Earl of Pembroke. She was maid, wife, and widow all in one day, her husband being slain at a tilting-match held in honor of her nuptials. On this sad event, she sequestered herself from all worldly delights, and bequeathed her estate to pious uses. Henry VI. was so liberal a benefactor to this college as to obtain the name of a second founder. There are 13 fellowships and 23 scholarships of different values.

## PEMBROKE COLLEGE—PEMBROKESHIRE.

PEMBROKE COLLEGE, Oxford: one of the colleges of Oxford Univ., England. Originally, it was BROADGATES HALL, a place of education belonging in part to St. Frydeswyde's Priory, in part to the monastery of Abingdon; and on the dissolution of the religious houses, it was given to Christ Church by Henry VIII. In 1629 it was made a college by James I., and took its name from the Earl of Pembroke, then chancellor of the univ. The constitution of P. C. is now as follows: There are to be not less than 10 fellowships, open to all, not to exceed £200 a year in value, so long as the number of the fellowships is less than 16. There are to be not less than 12 incorporated scholarships. There are at present 24, tenable for 5 years—except the Townshend scholarships, tenable for 8 years—the holders, however, sharing in the emoluments during only four years. This college presents to 8 benefices, of which 6 have been purchased since 1812.

PEMBROKESHIRE, *pěm'brúk-shěr*, or PEM'BROKE: maritime county of S. Wales, westernmost county of the principality; bounded s. by the Bristol Channel, w. and n. by St. George's Channel, e. and n.e. by Cardigan and Carmarthen; length, about 30 m., average breadth, about 20 m.; 393,682 statute acres, or 615 sq. m. The river Teivy separates the county from Cardigan on the n.e. On the n. are Newport and Fishguard Bays, the latter 3 m. in width, 30 to 70 ft. deep, with good anchoring ground. St. Bride's Bay, widest inlet on the western coast, is 10 m. in width, and has an inland sweep of 7 m. Milford Haven (q.v.) is the most important estuary. The shores on the s. are wild and inhospitable, and fronted by high, precipitous cliffs. The surface is undulating; green hills alternate with fertile valleys. The principal elevations occur in the Precelly Hills, which traverse the n. of the county from e. to w.—highest summit 1,754 ft. The rivers are not important; except that the Eastern and Western Cleddau unite and form a navigable portion of Milford Haven. The climate is mild, but damp in the s. of the county; while in the n., the temperature is considerably lower. There are excellent and productive soils in the s., and along the n.w. coasts the barley districts are famous; but the land on the Precelly Mountains and in the coal districts is inferior. Coal, slate, lead, and iron are the only minerals worked. Oats, barley, and potatoes are principal crops. P. is remarkable from the fact that, though the most distant of Welsh counties from England, more than half its surface is inhabited by an English-speaking population: this arose from the settlement of a colony of Flemings here, and their adoption of the English tongue. The district has hence been called Little England beyond Wales. The chief towns are Haverfordwest, St. Davids, Pembroke, and Tenby. Pop. (1891) 89,125; (1901) 87,910.

## PEMMICAN—PEMPHIGUS.

PEMMICAN, or PEMICAN, n. *pěm'mĭ-kăn* [N. Amer. word]: meat, especially venison or beef, cut into thin slices, divested of fat, and dried in the sun and wind: cured meat dried to hardness, then pulverized or pounded into a paste, and mixed with fat and sometimes raisins, and afterward compressed into cakes—used on long journeys of exploration or long voyages. Sometimes a few fruits of *Amelanchier ovata* are added for flavor. P. will keep uninjured a very long time.

PEMPHIGUS, *pěm'jĭ-gŭs* [Gr. *pemphix*, blister; *pemphigōs*, of a blister], or POMPHOLYX, *pŏm'fŏ-lĭks*: one of the skin-diseases, characterized by eruption of large vesicles filled with serous fluid, and known as *bullæ*. The disease occurs both in acute and in chronic form. In a mild case of acute P., *bullæ*, or blisters, from the size of a pea to that of a chestnut, appear in succession (chiefly on the extremities), and, having continued three or four days, break, form a thin scab, and soon heal, unaccompanied with febrile or inflammatory symptoms. In severe cases there is considerable constitutional disturbance; the *bullæ* are larger, and the scabs heal with difficulty. The chronic form differs mainly from the acute by its prolonged continuance. The acute variety affects children chiefly, and has been ascribed to dentition, errors of diet, etc.: while the chronic form attacks mostly aged persons, and is due probably to debility and impaired nutrition. The acute form usually requires nothing but cooling medicines and diet, and mild local dressings, e.g., simple cerate, to protect the raw surfaces from exposure to the air. In the chronic form, a nutritious diet, with judicious use of tonics (iron, bark, etc.), is commonly successful. In obstinate cases, physicians sometimes prescribe arsenic.

## PEN.

**PEN**, n. *pĕn* [F. *penne*, a feather, a pen—from L. *penna*, a feather: It. *penna*, see further below]: instrument for writing, formerly almost always a quill, now commonly of metal (see below): **V.** to write; to compose and commit to paper; to indite. **PEN'NING**, imp. **PENNED**, pp. *pĕnd*. **PENMAN**, n. *pĕn'măn* [*pen* and *man*]: a writer; one who teaches writing. **PEN'MANSHIP**, n. manner or art of writing. **PEN'NER**, n. *-nĕr*, one who writes with a pen. **PEN-CUTTER**, one who makes pens; also an instrument for making pens. **PEN-FISH**, a kind of eel-pout without a smooth skin. **PENKNIFE**, a small jointed and cased knife for the pocket. **PEN AND INK**, literary; in writing; applied to a sketch or outline drawn with a pen. **PEN HOLDER** or **CASE**, instrument for holding a pen or nib when writing, usually of cedar-wood, and made by machinery.

**PEN**, n. *pĕn* [AS. *pyndan*, to pound or shut up; *pund*, a pound or inclosure (see **POUND** 2)]: a small inclosure for sheep, fowls, etc.; a coop; a reservoir for water: **V.** to confine in a pen or in a narrow place; to coop; to incage. **PEN'NING**, imp. **PENNED**, pp. *pĕnd*, followed by *up*, shut up in their pen, as poultry. **PENT**, pp. *pĕnt*, confined or crowded into a narrow space.

**PEN**: instrument for writing with a fluid. In ancient times a kind of reed (Lat. *Calamus*) was used, though sometimes the letters were painted with a fine hair-pencil, as among the Chinese at the present day. Quill-pens (see **QUILLS**) came into use probably after the introduction of modern paper. The English name pen is from Lat. *penna*, a feather; but the old form of *penna* was *pesna* or *petna* (= Gr. *peteron*), from the root *pet*, to fly; and just as Lat. *ped* is identical with Eng. *foot* (see letter **F**), so *petna* or *peteron* corresponds to *feather* (Ger. *feder*). During the 18th c. many efforts were made to improve the quill-pen, the great defect of which was its speedy injury from use, and the consequent trouble of frequent mending; moreover, even the most skilful maker could not insure uniformity of quality, and any variation affected the writer's work. These efforts were chiefly to fit small metal or even ruby points to the nib of the quill-pen; but the delicacy of fitting was so great, that but very little success attended the experiments. At the beginning of the 19th c. pens began to be made wholly of metal; they consisted of a barrel of very thin steel, and were cut and slit to resemble the quill-pen as closely as possible. They were inferior and expensive (retail price at first half a crown, abt. 62 cents); their chief fault was hardness, which produced disagreeable scratching of the paper. In 1820, Joseph Gillott made an improvement, removing this great defect, and developing the manufacture to a marvellous extent. This consisted in making three slits instead of the single one, gaining much greater softness and flexibility. Gillott also introduced machinery, so reducing the cost that he was enabled to sell his improved pens 1821 at £7 4s. (about \$35) per gross, then considered remarkably cheap. Better pens are now sold at twopence (4 cents) per gross by the same

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manufacturer; in other words, 864 pens for the same price as one pen in 1821. The lowest priced pens are made almost entirely by machinery, but the better ones require much hand-labor for their completion; nevertheless, in the works of Mr. Gillott alone, who is only one of several large manufacturers in Birmingham, England, the annual production is now nearly 150,000,000 pens, requiring a supply of five tons per week of the fine sheet-steel made for the purpose in Sheffield, a portion of which is returned as scrap or waste for remanufacture.

There are (1890, Dec.) 23 factories in the world employed in making steel pens: 13 in Birmingham, Eng.; 4 in France; 1 in Germany; 5 in the United States. The steel from which the best metallic pens are made is produced in Sheffield, and from there the United States is supplied, the Sheffield steel being regarded as by far the best in the market. Nearly 25 tons of *pen-steel* are used in the world every week, giving a production of about 30,000,000 pens a week.

In the process of manufacture, the sheets of steel are cut into strips; then rolled until they attain a uniform thinness of  $\frac{1}{24}$  to  $\frac{1}{32}$  of an inch, according to the kind of pen wanted. These cuttings are packed in iron pots, sealed with clay, air-tight, and placed in the *muffle*, or closed furnace, where they are heated until all the temper is taken from the steel. The first mechanical operation is *cutting the blank*. This is effected with the aid of a screw-press, when, with a scissors-like action, a *punch* cuts from the strip of plate-steel the properly shaped *blank*. The *annealing* follows. The blanks are put into iron boxes, sent to the furnace, and when properly heated are set aside to cool gradually. The *stamping*, or marking, is the next step, and is accomplished by letting a steel die fall upon the little piece of metal, thereby giving the proper marking. The *piercing* or *perforation*, which gives the necessary elasticity to the pen, and also enables it to hold the ink, is a very important process, and the tools for its accomplishment are very delicate. The punch and bed having been fixed in a screw-press of the finest adjustment, the blow is given that makes a clean-cut hole, of an oblong shape. The *raising*, a technical name for bending, is the next process. One pen is taken at a time, and passed into the machine, where the proper curvature of the metal is given. When enough are ready for the hardening process, they are put into sheet-iron barrels, which are made to revolve over a slow fire until the pens acquire a proper temper. Brittleness has now given place to pliability, but the pens are black in color and scratch at the points. They are immersed in a bath of dilute sulphuric acid, and thereby cleansed; after which they are scoured. This is accomplished by putting them into galvanized iron barrels with sawdust mixed with a fine pebbly material. The cylinders being set in motion, the scouring, or polishing, is effected, and finished in a second receptacle, where the final silvery brightness is acquired, and the points attain their necessary smoothness. The *grinding*, noticeable in



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certain portions of the finished pen, is done usually by girls. The pen is delicately touched to a *bob*, or *glazer*, revolving at high speed. It is a circular piece of alder-wood, about ten inches in diameter and half an inch in width. Round it a covering of leather, dressed with emery, is fixed. This process finished, the *slitting* of the pen is entered upon. The tools are two oblong pieces of steel with edges as delicate as those of a razor. They are so adjusted that in the working of the machine the upper knife descends and meets the lower, and the process of slitting is completed.

A critical assorting is then had, and every pen not absolutely perfect is rejected. The final stage in the manufacture is the *coloring* and *varnishing*. The gray color noticeable on certain brands is produced by placing them in iron cylinders with a quantity of small quartz pebbly material. These are kept revolving until the bright steel is slightly roughed. They are then immersed in a bath of shellac varnish, being afterward dried and stoved. The completed pens, being now ready for use, are packed in boxes and packets.

In 1880, according to the highest official information, there were but two steel-pen establishments in the United States, one in N. Y. and one in N. J. The following tabulation of sworn statements will be of interest:

	New York.	New Jersey.
Number of steel-pen establishments.....	1	1
Amount of capital invested.....	\$22,500	\$150,000
Number of employés.....	50	200
Amount of wages paid.....	\$10,000	\$70,000
Value of material.....	\$3,450	\$27,000
Value of product.....	\$24,000	\$120,000

In 1890 there were five manufactories: one in N. J., one in Conn., one in N. Y., and two in Penn. Two of the establishments were started in consequence of the passage of the tariff act. There are also several agencies for the exclusive presentation of English goods.

In the manufacture of GOLD PENS, the statistics of 1880 were as follows:

Establishments (in N. Y.).....	12	
Capital invested.....		\$314,050
Number of employés.....	203	
Amount of wages paid.....		\$145,907
Value of material....		\$174,356
Value of product.....		\$461,761

Besides, there were in Mass. 2 manufactories on a very small scale.

In the manufacture of gold pens, the processes differ materially from those in the making of steel pens. Pure gold, or even 18-carat gold, is too soft; spring is lacking in it. The same is true of all gold below 12-carat. From 12 to 18 carat, the alloy has different degrees of temper which may be utilized for the work. The best metal for the purpose of pen-making is 16-carat gold, alloyed with silver and copper. It is the strongest, hardest, most elastic, and springy, and will give the longest 'life' to the pen, and the best satisfaction to the writer.

In the manufacture, the gold is cast into ingots, which

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are rolled into strips and cut into pen-shape. The extreme points are carefully *sawed* away for the reception of the iridium, which forms the writing point. The iridium is an extremely hard metal, very bright and close-grained, resembling polished silver, but not so white. The particles for the point of the pen are fastened by melting the gold around them with a blow-pipe. The process is called 'sweating.' The 'point' having been fixed, the remainder of the pen is hardened by a series of hammerings, which, when completed, leave the pen ready for the sawing or slitting process. This is accomplished by a thin, soft, copper saw, without teeth, covered with water and fine emery, and revolving very rapidly. The principle is the same as that on which stone and marble are sawn with sand: the fine emery, sticking in the soft copper, cuts the iridium, which is too hard to be sawn in any other way. The slit is completed by a tiny circular saw, cutting the slit to the previously made circular hole. The manufacture of iridium-pointed pens is very extensive in New York, where first the process is said to have been perfected. The subsequent processes are many and complex, but do not differ materially from those employed in the manufacture of steel pens. There is a popular notion that the best gold pens are pointed with diamonds. This is incorrect. A few of that kind were made many years ago; but they were very expensive, and the discovery of iridium put an end to their manufacture. Diamond-pointed pens are very scarce, and rated only as curiosities.

Positive official data regarding the present condition of the gold-pen manufacture is not and will not be obtainable until the 1890 census returns are put before the public.

PENAL, a. *pē'nāl* [OF. *penal*—from L. *pænālis*, penal—*from pæna*, suffering, pain: Gr. *poinë*: It. *penale*]: that punishes; that incurs or inflicts punishment; used as a place of punishment. PE'NALLY, ad. *-lī*. PENALTY, n. *pē'nāl-tī* [OF. *penalité*]: punishment inflicted by law, either on the person or by a money fine; a forfeiture for non-payment or non-compliance; fine or mulct (see below). PAINS AND PENALTIES: see under PAIN. PENAL SERVITUDE, punishment now in Britain substituted for transportation beyond seas, and extending from 5 years to 'for life' of the convict (see CONVICT: TRANSPORTATION).—SYN. of 'penalty': fine; mulct; forfeit; forfeiture; amercement; retribution; punishment.

PENALOGIST: erroneous form for PENOLOGIST (q.v.).

## PENALTY.

**PEN'ALTY:** sum of money declared by some statute or contract to be payable by one who commits an offense or breach of contract. It is considered as a kind of punishment, and constituting indirectly a motive to the party to avoid the act which induces such a consequence. Many contracts between parties contain a clause that one or other of them who fails to perform his part of the contract will incur a P., i.e., will be liable to pay a fixed sum of money to the other party. In such cases, a distinction is drawn between a liquidated and unliquidated P.; and whether it is of the one kind or the other depends on the language in the contract. If it is a liquidated P., then, when the breach of contract is committed, the party in default must pay that precise sum, neither more nor less; but if it is unliquidated, then he is to pay, not the whole sum, but merely such part of it as corresponds to the injury or damage done, and of which proportion a jury is the sole judge in an action of damages. In statutes, when penalties are declared to follow on certain illegal acts, the sum is sometimes fixed, but in many cases only a maximum sum is stated, it being left to the court or the justices who enforce the P. to decide what is a sufficient punishment for the offense. Sometimes penalties can be sued for only by the parties immediately injured; but, as a general rule, and unless it is otherwise restricted, anybody may sue for the P.; for in an offense against public law, where there is no public prosecutor, any person who chooses may set the law in motion. Accordingly, not only may anybody in general sue for the P., but an inducement is offered by declaring the party who does so to be entitled to the whole or a half of the P. Without such inducement, many offenses would be unpunished. The party who so sues is generally called the informer. Sometimes the P. can be sued for only in the superior courts of law; but in the great majority of instances, the enforcing of penalties is part of the administration of justice before justices of the peace. It is for the justices to fix the amount if they have (as they generally have) a discretion to do so. If it is not paid, the justices may issue a distress-warrant, authorizing a constable to seize and sell the goods of the party to pay the fine; and if there are no goods, then the justices may commit the party to prison as a substitutionary punishment. Sometimes justices have a discretion either to impose a P. or commit the party to prison as an alternative punishment. All these matters depend on the construction of particular statutes.—See DAMAGES.

## PENANCE.

**PENANCE**, n. *pěn'ăns* [OF *penance*—from L. *pœnitentiă*, penitence]: in Roman Catholic theology, voluntary or imposed and accepted pain or suffering, as punishment by which a repentant sinner manifests his sorrow for sin, and seeks to atone for the sin, and to avert the punishment which, even after the guilt has been remitted, may still remain due to the offense. P. is believed in the Rom. Cath. Church to be one of the sacraments of the New Law. It has relations, both as a sacrament, and as a private personal exercise.

P., in the Rom. Cath. Church is distinguished from repentance, which is simply sorrow for evil doing, accompanied with a purpose of amendment. P. is the fruit or the manifestation of this sorrow, and it is commonly accompanied or expressed by some of those external acts which are natural manifestations of any deep sorrow, either negative, as the neglect of ordinary attention to dress, to the care of the person, to the use of food; or positive, as direct acts of personal mortification and self-inflicted pain, such as fasting, wearing haircloth, strewing the head with ashes, watching of nights, sleeping on a hard couch, etc. Such manifestations of sorrow, common among the eastern races, are frequently alluded to in the Scriptures. In the personal practice of Christians in the early centuries, P. was prominent; and the chief and acknowledged object of the stated Fasts (q.v.), and other works of mortification, was penitential correction, or the manifestation of sorrow for sin.

A still more striking use of P., however, was the disciplinary one; and this, in the Rom. Cath. view, is connected with the sacramental character of penance. Any discussion of this purely theological question would be out of place here; it is enough to state briefly that Rom. Catholics number P. among the Seven Sacraments (q.v.), and believe it to be of direct divine institution (Matt. xvi. 19; xviii. 18; John xx. 21). The *matter* of this sacrament consists, in their view, of the three acts of the penitent—contrition, or heartfelt sorrow for sin, as being an offense against God; confession, or detailed accusation of one's self to a priest approved for the purpose; and satisfaction, or the acceptance and accomplishment of certain penitential works, in atonement of the sin confessed: the *form* of the sacrament is the sentence of absolution from sin pronounced by the priest who has received the confession, and has been satisfied of the penitential disposition of the self-accusing sinner. In all these points, of course, they are at issue with Protestants. It is shown from Tertullian and other writers, that from a very early time persons excluded from the church because of scandalous offenses, especially idolatry or apostasy, murder or adultery, etc., were subjected to certain penitential regulations. The period of penitential probation differed, but in general was graduated according to the enormity of the sin, some going so far in their rigor (see NOVATIAN) as, contrary to the clearly-expressed sense of the church, to carry it even beyond the grave. In the earlier ages, much depended on the spirit of each particular church or

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country; but about the 4th c., the public penitential discipline assumed a settled form, which, especially in the Greek Church, is remarkable. Sinners of the classes above referred to had their names enrolled; and were (in some churches, after having made a preliminary confession to a priest appointed for the purpose) admitted, with a blessing and other ceremonial, by the bishop to the rank of penitents. This enrolment appears to have been usually on the first day of Lent. The penitents so enrolled were arranged in four grades, called—1. (Gr. *prosklaiontes*, Lat. *flentes*) ‘Weepers;’ 2. (Gr. *akroōmenoi*, Lat. *audientes*) ‘Hearers;’ 3. (Gr. *hypopiptontes*, Lat. *prosternentes*) ‘Prostraters;’ 4. (Gr. *systantes*, Lat. *consistentes*) ‘Standers.’ Of these classes, the first were obliged to remain outside of the church at the time of public worship, and to ask the prayers of the faithful as they entered. The second were permitted to enter and to remain in the place and during the time appointed for the Catechumens (q.v.); but, like them, were required to depart before the commencement of the solemn part of the Liturgy (q.v.). The third were permitted to pray with the rest, but kneeling or prostrate, and for them were prescribed many other acts of mortification. The fourth were permitted to pray with the rest in a standing posture, though apparently in a distinct part of the church; but they were excluded from making offerings with the rest, and still more from receiving the communion. The time to be spent in each of these grades at first differed according to times and circumstances, but was afterward regulated by elaborate laws, called penitential canons. Still it was in the power of the bishop to abridge or to prolong it; a power, the exercise of which is connected with the historical origin of the practice of Indulgence (q.v.). Of these four grades, the first two scarcely appear in the Western Church. It is a subject of controversy whether, and how far, this discipline was extended to other than *public* sinners; but it seems certain that individuals, not publicly known as sinners, *voluntarily* enrolled themselves among the penitents. All four grades wore a distinguishing penitential dress, in which they appeared on all occasions of public worship, and were obliged to observe certain rules of life, to renounce certain indulgences and luxuries, and to practice certain austerities. In some churches they were employed in the care of the sick, the burial of the dead, and other of the more laborious works of charity. The penitent, in ordinary cases, could be restored to communion only by the bishop who had excluded him, and this only at the expiration of the appointed time, unless the bishop himself had shortened it; but, in case of dangerous illness, he might be restored, with the condition, however, that, if he recovered from the illness, the whole course of P. should be completed. The reconciliation of penitents took place usually in Holy Week, and was publicly performed by the bishop in the church, with prayer and imposition of hands: it was followed by the administration of communion. If any of the clergy were guilty of a crime to which public P. was annexed

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they were first deposed from the rank of the clergy, and then subjected to the ordeal, like the laity themselves. This public discipline continued in force with greater or less exactness in the 5th, 6th, and 7th c., gradually, however, being replaced by semi-public, and ultimately by private P. In the 11th and 12th c. the public P. had entirely disappeared. The nature and origin of *private penance* is a subject of controversy between Rom. Catholics and Protestants; the former contending that it had existed from the first, and that it held the same place even in the ages of public P. for *secret sins* which the public P. did for public offenses. At all events, from the date of the cessation of the public discipline, it has existed universally in the Roman Church. The priest, in absolving the penitent, imposes upon him the obligation of reciting certain prayers, undergoing certain works of mortification, or performing certain devotional exercises. These acts of the penitents are held to form an integral part of the sacrament of penance.

According to Protestants, P. has no countenance whatever from Scripture, and is contrary to some essential principles of the Christian religion; particularly to the doctrine of justification by faith in Jesus Christ alone, on the ground of his complete or 'finished' work; P. being, in fact, founded on a doctrine of—at least—supplementary atonement by the works or sufferings of man—the sinner himself. The outward expressions of humiliation, sorrow, and repentance common under the Jewish dispensation, are regarded as very consistent with the character of that dispensation, in which so many symbols were employed. It is also held, that the self-inflicted austerities, as fasting, sackcloth and ashes, etc., of Jewish and early Christian times, had for their sole purpose the *mortification* of unholy lusts and sinful passions in the people of God; or the expression of sorrow for sin, so that others beholding might be warned of its evil and restrained from it; all which is perfectly consistent with the principles of Christianity, if kept within the bounds of moderation and discretion. But P. in any other view, as a *personal exercise*, is utterly rejected. Arguments founded on the meaning of the two Greek words *metanoëō* and *metameleomai*, both translated in our English version *repent*, are much urged by many Rom. Cath. controversialists—the former being represented as equivalent to the English *Do penance*; but this is condemned by Protestants as inconsistent with the very use of the words in the New Test. itself. That P. began, as a practice, very early in the Christian Church, is not only admitted by Protestants, but alleged in proof of the very early growth of those corruptions which finally developed themselves in the doctrines and practices of the Rom. Cath. Church, and of which Protestants also hold that there are plain intimations in the New Test., not only prophetic, but showing the development of their germs to have already begun during the age of the apostles.

In the discipline of the Prot. churches P. is now unknown. The nearest approach to the Rom. Cath. polity

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on the subject was that in use among some of the English Puritans of the 17th c., but particularly in the Church of Scotland during that and the 18th c., when it was common 'to make satisfaction publicly on the Stool of Repentance' (q. v.). It does not seem to have occurred to the Reformers or their more immediate successors in the Prot. churches, that their system of discipline, with its public rebukes and enforced humiliations of various kinds—as the wearing of a sackcloth robe, and sitting on a particular seat in church—was liable to be interpreted in a sense very different from that of a mere expression of sorrow for sin; but the belief is now very general among even the most zealous adherents of their doctrinal opinions, that in all this they adopted practices incongruous with their creed, and in harmony rather with that of the Church of Rome. Nor do they seem to have perceived that Church Discipline (q. v.), in its proper sense, as relating to ecclesiastical rights and privileges, is wholly distinct from the imposition of penalties by churches or church courts. Penitential humiliations, imposed by ecclesiastical authority, are now no more in favor where church discipline is most strict, than where the utmost laxity prevails. The commutation of penalties deemed shameful, for a fine to the poor of the parish, was an abuse once prevalent in Scotland, but never sanctioned by the higher ecclesiastical authorities.

PENANG': see PRINCE OF WALES ISLAND.

PENANG LAW'YERS, *pē-nāng'*: commercial name for the stems of a species of palm imported from Penang for walking-sticks. They are small and hard, and have a portion of the root-stock attached, which is left to form the handle.

PENARTH, *pēn-ārth'*: important seaport and summer resort in Wales, at the mouth of the Taff river, and connected with Cardiff by rail and steamer. It was made a tidal harbor 1856, and large docks have been constructed at great expense. These docks are connected with the Taff Vale railroad by a branch road 4 m. in length; and vast quantities of coal, coke, and iron are shipped. The church of St. Augustine, the dock offices, and the custom-house are important buildings. Pop. (1881) 6,228; (1891) 12,422.

## PENATES—PENCIL.

**PENATES**, n. plu. *pě-nā'tēz* [L. *Penātēs*, the Penates —from *penitus*, within; *penus*, provisions]: the household gods of the anc. Romans, worshipped in the inner parts of each dwelling: see **LAR**.

**PENCE**, n. *pěns*: the plu. of **PENNY**, which see.

**PENCHANT**, n. *pāng-shāng'* [F.—from *pencher*, to incline; L. *pendeo*, I hang]: inclination; decided taste.

**PENCIL**, n. *pěn'sil* [OF. *pincel*; F. *pinceau*, a pencil— from L. *penicillus*, a small tail, a painter's brush or pencil —from *peniculus*, a little tail; *penis*, a tail: Sp. *pincel*]: thin strip or thread of plumbago or black lead, or other substance, generally inclosed in a cover of soft wood, and pointed at one end, used for writing or drawing; small fine brush used in painting (see below): the art of drawing: a collection of rays of light converging to, or diverging from, a single point: V. to write, mark, or sketch with a pencil; to delineate. **PEN'ILLING**, or **PEN'ILING**, imp.: **ADJ.** drawing or marking with a pencil: **N.** the act of sketching or painting; the work of the pencil or brush; a sketch. **PEN CILLED**, or **PEN'ILED**, pp. *-sild*: **ADJ.** marked or painted with a pencil; having pencils or rays; radiated; in *bot.*, marked with lines as with a pencil, or having the appearance of a hair-pencil. **PENCIL CASE**, a metal case having a pencil ready for use. **PENCIL OF RAYS**, in *optics*, an aggregate or collection of rays of light, radiating from, or converging to, a common point.

**PENCIL**: instrument for writing, drawing, and painting. Pencils differ as much in their construction as in the uses to which they are applied. Probably the P. was the first instrument used by artists, and consisted then of lumps of colored earth or chalk simply cut into a form convenient for holding in the hand. With such pencils were executed the line-drawings of Aridices the Corinthian, and Telephanes the Sicyonian, also the early one-colored pictures, or *monochromata*, of the Greeks and Egyptians; but as wet colors began to be used, small fine-pointed brushes would be required, and we find it recorded that as early as B.C. 4th c. several Greek artists had rendered the art of painting with hair-pencils so famous, that some of their pictures sold for vast sums of money. There are now in use the following kind of pencils: hair-pencils, black-lead pencils, chalk-pencils, and slate-pencils. The first are used for painting or writing with fluid colors, either oil or water, and in China and Japan are employed almost entirely instead of pens for writing; the color used being the black or brown pigment obtained from various species of sepia or cuttle-fish. The manufacture of hair-pencils is of great importance, and requires much care and skill. The hairs employed are chiefly those of the camel, badger, sable, mink, kolinski, fitch, goat, and the bristles of hogs; and the art of P.-making requires that these hairs shall be tied up in cylindrical bundles, so nicely arranged that all their naturally fine points shall be in one direction, and that the central one shall project the furthest, and the others in succession shall recede, so that, collectively, the



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whole shall form a beautifully smooth cone, the apex of which is a sharp point. Black-lead pencils are of graphite or plumbago, which contains no lead whatever in its composition, but is in reality almost pure carbon: see BLACK LEAD. The misnomer is probably owing to the fact, that, previous to the employment of graphite for making pencils, common lead was used, and this was the case even within the 19th c. Consequently, as the plumbago, with its black streak, offered a contrast to the pale one of the lead, it was called in distinction from *lead*, *black lead*.

The first lead-pencils were made in England about 1560. They were far inferior both in quality and appearance to those of the present day. A vast improvement was effected by the substitution of graphite for lead. For a long period the graphite for this purpose was obtained from the Cumberland mines in England, but large quantities have been found in Siberia, and there are mines in Bohemia, Sweden, and other European countries; in Ceylon, Canada, and at several points in the United States. The Alibert mine in Siberia furnishes the graphite for a famous style of artists' pencils, but the purest grade is obtained at Ticonderoga, N. Y., where the yield 1888 was stated at 400,000 lbs., with value of \$33,000. By far the larger part of the lead-pencils manufactured in the United States are of foreign graphite, but one large establishment uses the product of American mines. When a very fine grade is used the graphite is sometimes cut in blocks of the proper size and merely inclosed in wood; but in order to secure uniformity of quality it is usually ground to an extremely fine powder, freed from impurities, mixed with a sufficient quantity of clay to give it the required consistency, and made into a solid mass by hydraulic pressure, after which it is cut into the sizes required. The clay used with graphite in making lead-pencils is obtained mostly from Bavaria and Bohemia. Nearly all the wood used in the manufacture of pencils in this country and in Europe is obtained from the cedar-trees of Florida. The logs are made into boards a little more than half as thick as the pencils are to be. These are cut into sticks, some of which are grooved with circular saws. The sticks of graphite are then laid into the grooves, and covered with flat pieces, which are glued to those which are grooved. After the two parts are united the pencils are rounded and polished by machines. They are then stamped with the name of the maker, and with a letter or number to indicate the degree of hardness of the lead. No. 1 is the softest of the numbered pencils, No. 2 being medium, and No. 3 hard. When letters are used, M indicates a medium degree of hardness, SM a soft medium, S a soft, and H a hard grade. Artists' pencils of soft grades are sometimes marked B instead of S. The repetition of a letter indicates a greater degree of the quality for which the single letter stands. Previous to 1830 all the lead-pencils used in the United States were imported. In that year a small shop for their manufacture was opened in New York. The work was done by hand, and the

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men took the rough pencils home for finishing. The first large establishment of the kind was erected in New York 1861 by A. W. Faber of Germany, represented, as he had been for several years here, by Eberhard Faber. After the destruction by fire of the works, they were rebuilt on Long Island. No other factory of importance was opened in the United States till 1865, when two large companies were formed. One or two more have since entered the field, but the business is still practically controlled by four or five companies.

Chalk-pencils are made in a similar manner, only that finely-powdered colored chalks, such as are used for crayons, are substituted for the black lead. Previous to pressing and cutting the chalk, it is mixed with a little hot melted wax, which gives it softness and adhesiveness.

Slate-pencils for writing on slate are made either by cutting slate into thin sticks and rounding them, or by cutting it into fine square slips, and encasing them in wood, as in the case of black lead, etc.

From the highest available statistical information, the production of lead-pencils of all kinds in the United States for 1880 is given in the following table:—

	Mass.	N. J.	N. Y.
Establishments.....	2	1	1
Capital invested.....	\$5,500	\$100,000	\$236,097
Employees.....	9	170	220
Wages paid.....	\$2,115	\$ 35,000	\$ 65,118
Value of material.....	\$2,500	\$ 35,000	\$ 59,844
Value of product.....	\$7,500	\$100,000	\$172,427

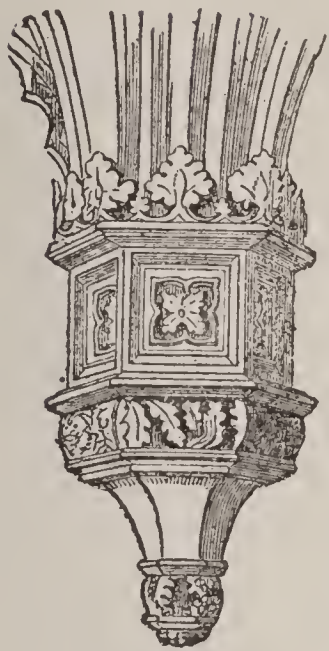
In 1890 there were, as in 1880, four establishments, but with greatly increased facilities for manufacture. At the Paris Exposition as many as 1,106 different kinds of pencils of American manufacture were exhibited, no two alike. The statistics for the year 1890 are not yet available, but will without doubt show a greatly increased production, the American graphite being of superior quality, and the mines easy of access.

**PEND**, n. *pěnd* [F. *pendre*, to hang—from L. *pendēre*, to hang downward]: in *Scot.*, an arched entrance or passage from a street through a block of buildings into another street, or to the ground or tenements behind—so called from the manner in which arches are built, the stones being in a *pendent* form.

**PENDANT**, n. *pěn'dănt* [F. *pendant*, hanging, pending—from L. *pendens* or *penden'tem*, hanging down: It. *pendente*]: anything hanging by way of ornament, as an earring; wooden or stone ornament hanging from ceilings, vaults, staircases, timber-roofs, etc. It is sometimes a simple ball, and sometimes elaborately ornamented, and is used chiefly in the later Gothic and Elizabethan styles; streamer or long tapering piece of bunting hung at the mast-heads of vessels (see **PENNANT**): a hanging apparatus from the roof for a light-holder, usually ornamental. **PEN'DANTS**, n. plu. *-dănts*, in the *fine arts*, two pictures, statues, groups of sculpture, or engravings, which, from their similarity of subject, size, form, etc., can be placed

## PENDANTS—PENDLETON.

together with regard to symmetry. PEN'DENT, a. -*děnt*,



Pendant.

hanging; projecting; jutting over. PEN'DENTLY, ad. -*li*. PEN'DENCE, n. -*děns*, or PEN'DENCY, n. -*děns-i*, suspense; state of being undecided. PENDENTIVE, n. -*iv*, the triangular segment of a vault thrown across the angles of rectangular compartments, in order to reduce them to a circular or other suitable form to receive a dome. The pendentive is thus the portion of a vault resting on one pier, and extending from the springing to the apex. It is characteristic of Byzantine architecture. PENDING, a. *pěnd'ing*, yet undecided; hanging in suspense; not terminated: PREP. during; during the continuance of. *Note.*—PENDANT is the F. spelling, and PENDENT the L. spelling.

PENDANTS, RUDDER: strong ropes spliced in the rings of the rudder-chain, to prevent loss of the rudder, should it by any accident become unshipped.

PENDLETON, *pěn'dl-ton*: city, cap. of Umatilla co., Or.; on the Umatilla river and the Union Pacific railroad; 231 m. e. of Portland. It contains a new co. courthouse (cost \$100,000), large brick opera-house, water-works supplied by springs in the hills, street railroad, and 2 electric light plants. There are 7 churches and connected charities (Bapt., Congl., Meth. Episc., Meth. Episc. S., Presb., Prot. Episc., and Rom. Cath.), graded public school (\$25,000), Independent Acad., Rom. Cath. school and hospital (erecting 1890), Masonic temple, branches of the leading fraternal societies, board of trade, 1 national bank (\$70,000), 1 state bank (\$60,000), and 2 daily, 1 semi-weekly, and 1 weekly newspapers. The Umatilla Indian reservation (268,000 acres) is directly e. of P., adjoining the city limits. Pop. (1890) 2,506; (1900) 4,406.

PEN'DLETON: township of Lancashire, England, with a station on the Lancashire and Yorkshire railway; a suburb of Manchester, 2½ m. w.n.w. of the town of Manchester. P. is part of the parliamentary borough of Salford, and since 1852 it has been incorporated with the municipality of the same borough. The rapid increase of its population is due to the immense industry of the locality. The inhabitants are employed in the numerous cotton and flax mills, print and dye-works, iron foundries, soap, and chemical works. Hundreds of them are employed also in the well-known P. collieries. P. is also the residence of a portion of the mercantile community from Manchester, whose large mansions, with their parks and gardens, are dotted at intervals along the two roads leading from the township w. to Eccles. Pop. (1871) 30,652; (1881) 48,409; (1891) 40,246.

## PENDLETON—PENDS D'OREILLES.

**PEN'DLETON, EDMUND:** 1721, Sep. 9—1803, Oct. 23; b. Caroline co., Va. His educational advantages were slight, but he studied law, commenced practice 1744, was appointed justice of the co. 1751, and became a member of the house of burgesses 1752. He opposed the Stamp Act, was elected to the colonial convention 1774, and to the first continental congress. In politics he was strongly opposed to Patrick Henry. For some time he was practically the manager of the affairs of the colony of Va., and when the state govt. was organized he was elected speaker of the house, and was a member of the committee appointed to revise the laws. He was seriously hurt by a fall from his horse 1777, but afterward held important judicial offices and was pres. of the Va. convention which ratified the U. S. constitution. He died at Richmond.

**PEN'DLETON, EDMUND MONROE, M.D.:** 1815, Mar. 19—1884, Jan. 26; b. Eatonton, Ga. He graduated from the South Carolina Medical College 1837, and practiced medicine many years, declining various professorships. By his investigations and discoveries, especially his demonstration of the value of cotton-seed for fertilizing, he rendered invaluable service to the agricultural interests of the country. He was prof. of agri. and hort. in the Univ. of Georgia 1872-77, wrote for medical journals, and published *Scientific Agriculture* 1874, which has been used as a text-book in many schools and colleges. He died at Atlanta, Georgia.

**PEN'DLETON, GEORGE HUNT:** 1825, July 25—1889, Nov. 24; b. Cincinnati; son of Nathaniel G. P. He attended an acad. in Cincinnati, studied at Heidelberg, spent some time in foreign travel, studied law, and commenced practice in Cincinnati. He soon entered political life as a democrat, was elected to the state senate 1853, and was a member of congress 1857-65, serving on important committees. At the beginning of the troubles preceding the civil war he favored a compromise, but finding the plan impracticable gave all his influence in favor of the national govt. He was candidate for vice.-pres. on the democratic ticket with Gen. McClellan for pres. 1864; was a member of the convention of Loyalists at Philadelphia 1866, was defeated for candidate for gov. of O. 1869, and accepted the presidency of the Kentucky Central railroad. He was a member of the U. S. senate 1879-85, and rendered eminent service in introducing and securing the adoption of the Civil Service Reform Bill. He was an unsuccessful candidate for re-election to the senate, and was appointed U. S. minister to Germany 1885, Mar. 23, which office he held till the spring of 1889. He died at Brussels, Belgium.

**PENDS D'OREILLES:** see **KALISPELS.**

## PENDULOUS—PENDULUM.

PENDULOUS, a. *pĕn'dū-lūs* [L. *pendulus*, hanging--from *pendĕō*, I hang downward: It. *pendolo*: Sp. *pendulo*]: hanging; swinging; oscillating; in *bot.*, inclined so that the apex is pointed vertically downward--applied to ovules that hang from the upper part of the ovary. PEN'DULOUSNESS, n. *-nēs*, or PEN'DULOS'ITY, n. *-lōs ī-tī*, the state or quality of being pendulous. PEN'DULUM, n. *-lūm* [L. *pendulum*; F. *pendule*]: a weight suspended from a fixed point that it may swing freely from side to side, as in a clock (see below). COMPENSATION PENDULUM (see PENDULUM, below).

PEN'DULUM: in its widest scientific sense, a body of any form or material which, under the action of some force, vibrates about a position of stable equilibrium. In its more usual application, however, this term is restricted in conformity with its etymology to bodies suspended from a point, or oscillating about an axis, under the action of gravity, so that, though the laws of their motion are the same, Rocking-stones (q.v.), magnetic needles, tuning forks, balance wheel of a watch, etc., are not included in the definition.

The *simple* pendulum consists (in theory) of a heavy point or particle, suspended by a flexible string without weight, therefore constrained to move as if it were always on the inner surface of a smooth spherical bowl. If such a pendulum be drawn aside into a slightly-inclined position, and allowed to fall back, it evidently will oscillate from side to side of its position of equilibrium, the motion being confined to a vertical plane. If, instead of being allowed to fall back it be projected horizontally in a direction perpendicular to that in which gravity tends to move it, the bob will revolve about its lowest position; and there is a particular velocity with which, if it be projected, it describes a circle about that point, and is then called a *conical* pendulum. As the theory of the simple pendulum can be very easily

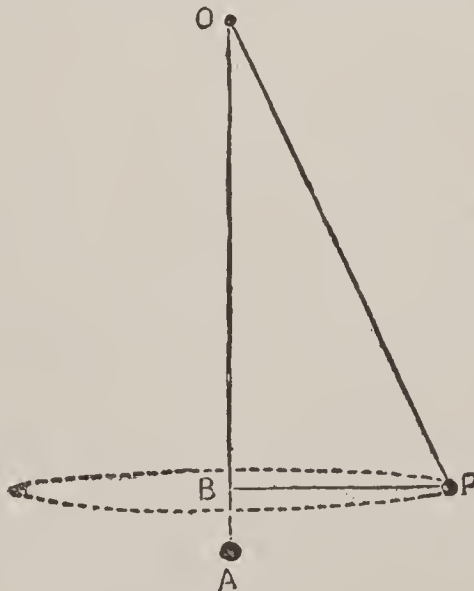


Fig. 1.

explained, by reference to that of the conical pendulum, we commence with the latter, which is extremely simple. To find the requisite velocity, we have only to notice that

## PENDULUM.

the (so-called) Centrifugal Force (q.v.) must balance the tendency toward the vertical. This tendency is not due directly to gravity, but to the tension of the suspending cord. In the fig. let  $O$  be the point of suspension,  $OA$  the pendulum in its lowest position,  $P$  the bob in any position in the (dotted) circle which it describes when revolving as a conical pendulum;  $PB$ , a radius of the dotted circle, is evidently perpendicular to  $OA$ . Now, the centrifugal force is directly as the radius  $PB$  of the circle, and inversely as the square of the time of revolution. Also the radius  $PB$  is  $PO \sin. BOP$ , the length of the string multiplied by the sine of the angle it makes with the vertical; and the force toward the vertical is proportional to the earth's attraction, and to the tangent of the above angle—as may be at once seen from the consideration that the three forces acting on the bob at  $P$  are parallel, and therefore proportional, to the sides of the triangle  $OBP$ . Hence the square of the time of revolution is directly as the length of the string and the sine of the angle  $BOP$ , and inversely as the earth's attraction and the tangent of the same angle; or (what is easily seen to be equivalent) to the length of the string and the cosine of its inclination to the vertical directly, and to the earth's attraction inversely. Hence, in any given locality, all conical pendulums revolve in equal times, whatever be the lengths of their strings, so long as their *heights* are equal; the height being the product of the length of the string by the cosine of its inclination to the vertical. Also the squares of the times of revolution of conical pendulums are as their heights directly, and as the earth's attraction inversely.

Now, *so long as a conical pendulum is deflected only through a very small angle from the vertical*, the motion of its bob may be considered as compounded of two equal simple pendulum oscillations in directions perpendicular to each other, such as it appears to make to an eye on a level with it and viewing it at some distance, first from one point, say on the north, and then from another  $90^\circ$  round, say on the east. And these motions take place, by Newton's second law (see MOTION, LAWS OF), independently. Also the time of a (double) oscillation in either of these directions is evidently the same as that of the rotation of the conical pendulum. Hence, for *small arcs of vibration*, the square of the time of oscillation of a simple pendulum is directly as its length, and inversely as the earth's attraction. Thus, the length of the second's pendulum at London being 39.1393 inches, that of the half-second's pendulum is 9.7848 inches, or one-fourth; that of the two-seconds' pendulum 156.5572 inches, or four times that length. It follows from the principle now demonstrated, that so long as the arcs of vibration of a pendulum are all small relatively to the length of the string, they may differ considerably in length among themselves, without differing appreciably in time. It is to this property of pendulum oscillations known as Isochronism (q.v.), that they owe their value in measuring time: see HOROLOGY.

That the times of vibration of different pendulums are

## PENDULUM.

as the square roots of their lengths, may be demonstrated to the eye by a very simple experiment. Suspend three musket balls on double threads as in figure 2, so that the heights in the dotted line may be as 1, 4, and 9. When they are made to vibrate simultaneously, while the lowest ball makes one oscillation the highest will be found to make three, and the middle ball one and a half.

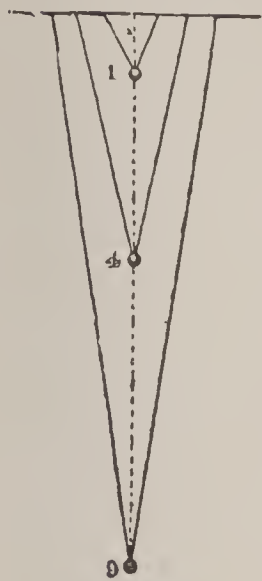


Fig. 2.

A pendulum of *given* length is a most delicate instrument for the measurement of the relative amounts of the earth's attraction at different places. Practically, it gives the kinetic measurement of gravity, which is not only by far the most convenient, but also the true measure. By this application of the pendulum, the oblateness of the earth has been determined, in terms of the law of decrease of gravity from the poles to the equator. The instrument has been employed also to determine the mean density of the earth (from which its mass is directly derivable), by the observation of its times of vibration at the mouth and at the bottom of a coal-pit. It was shown by Newton that the force of attraction at the bottom of a pit depends only on the internal nucleus which remains when a shell, everywhere of thickness equal to the depth of the pit, has been supposed to be removed from the whole surface of the earth. The latest observations by this method were made in the Harton coal-pit, by Airy, English astronomer-royal, and gave for the mean density of the earth a result nearly equivalent to that deduced by Cavendish and Maskelyne from experiments of totally different nature. See EARTH.

If the bob of the simple pendulum be slightly displaced in any manner, it describes an ellipse about its lowest position as centre. This ellipse may, of course, become a straight line or a circle, as in the cases already considered. The bob does not accurately describe the same curve in successive revolutions; in fact, the elliptic orbit just mentioned rotates in its own plane about its centre, in the same direction as the bob moves, with an angular velocity nearly proportional to the area of the ellipse. This is an interesting case of *progression of the apse* (see APSIS), which can be watched by any one who will attach a small bullet to a fine thread; or, still better, attach to the lower end of a long string fixed to the ceiling a funnel full of fine sand or ink which is allowed to escape from a small orifice. By this process a more or less permanent trace of the motion of the pendulum is recorded, by which the elliptic form of the path and the phenomena of progression are well shown.

According to what is stated above, there ought to be no progression if the pendulum could be made to vibrate simply in a straight line, as then the area of its elliptic orbit

## PENDULUM.

vanishes. It is, however, found almost impossible in practice to render the path absolutely straight; so that there always is from this cause a slight rate of change in the position of the line of oscillation. But as the direction of this change depends on the direction of rotation in the ellipse, it is as likely to affect the motion in one way as in the opposite, and is thus easily separable from the very curious result obtained by Foucault, that on account of the earth's rotation, the plane of vibration of the pendulum *appears to turn* in the same direction as the sun, that is, in the opposite direction to the earth's rotation about its axis. To illustrate this now well-known case, consider for a moment a simple pendulum vibrating at the *pole* of the earth. Here, if the pendulum vibrates in a straight line, the direction of that line remains absolutely fixed in space, while the earth turns round below it once in 24 hours. To a spectator on the earth it appears, of course, as if the plane of motion of the pendulum were turning once round in 24 hours, but in the opposite direction. To find the amount of the corresponding phenomenon in any other latitude, all that is required is to know the rate of the earth's rotation about the vertical in that latitude. This is easy, for velocities of rotation are resolved and compounded by the same process as forces, hence the rate at which the earth rotates about the vertical in latitude  $\lambda$  is less than that of rotation about the polar axis in the ratio of  $\sin. \lambda$  to 1. Hence the time of the apparent rotation of the plane of the pendulum's motion is  $\frac{24 \text{ hours}}{\sin. \lambda}$ . At the pole, this is simply 24 hours; at the equator, it is infinitely great, or there is no effect of this kind; in intervening latitudes it varies proportionally.

We have not yet alluded to the obvious fact that a *simple* pendulum, such as is described above, exists in theory only, since we cannot procure either a single heavy particle, or a perfectly light and flexible string. But it is easily shown, though the process cannot be given here, that a rigid body of any form whatever vibrates about an axis under the action of gravity, according to the same law as the hypothetical simple pendulum. The length of the equivalent simple pendulum depends upon what is called the Radius of Gyration (q.v.) of the pendulous body. Its property is simply this, that if the whole mass of the body were collected at a point whose distance from the axis is the radius of gyration, the Moment (q.v.) of inertia of this heavy point (about the axis) would be the same as that of the complex body. The square of the radius of gyration of a body about any axis is greater than the square of the radius of gyration about a parallel axis through the centre of gravity, by the square of the distance between those lines. Now, the length of the simple pendulum equivalent to a body oscillating about any axis is directly as the square of the radius of gyration, and inversely as the distance of the centre of gravity from the axis. Hence, if  $k$  be the radius of gyration of a body about an axis through the centre of gravity,  $\sqrt{k^2 + h^2}$  is that about a parallel axis



## PENDULUM.

whose distance from the first is  $h$ ; and the length,  $l$ , of the equivalent simple pendulum is  $l = \frac{k^2 + h^2}{h}$ .

This expression becomes infinitely great if  $h$  be very large, and also if  $h$  be very small (that is, a body vibrates very slowly about an axis either far from, or near to, its centre of gravity). It must therefore have a minimum value. By solving the equation above as a quadratic in  $h$ , we find that  $l$  cannot be less than  $2k$ , which is, therefore, the length of the simple pendulum corresponding to the quickest vibrations which the body can execute about any axis parallel to the given one. In this case, the value of  $h$  is equal to  $k$ . Hence, if a circular cylinder be described in a body, its axis passing through the centre of gravity, and its radius being the radius of gyration about the axis, the times of oscillation about all generating lines of this cylinder are equal, and less than the times of oscillation about any other axis parallel to the given one. Also, since the formula for  $l$ , above given, may be thus written,  $h(l - h) = k^2$ , it is obvious that it is satisfied if  $l - h$  be put for  $h$ . Hence, if any value  $l$  (not less than  $2k$ ) be assigned as the length of the equivalent simple pendulum, there are *two* values of  $h$  which will satisfy the conditions; that is, there are two concentric cylinders, about a generating line of either of which the time of oscillation is that of the assigned simple pendulum. When  $l = 2k$ , these cylinders coincide, and form that above described. And, since the sum of the radii of these cylinders is  $l$ , it is obvious that if we can find experimentally two parallel axes about which a body oscillates in equal times, and if the centre of gravity of the body lie *between* these axes, and in their plane, *the distance between these axes is the length of the equivalent simple pendulum*. This result is of great importance: it enabled Kater (the first to employ it) to use the complex pendulum for determination of the length of the simple second's pendulum in any locality. The simple pendulum, though perfect in theory, cannot be constructed; but this method obtains its results.

*Compensation Pendulum.*—This is a clock-pendulum in which the effects of the changes of temperature on the length of the rod are counteracted by the difference in the expansion of the two or more metals of which it is composed. As the length of a rod or bar of any material depends on its temperature (see HEAT), a clock with an ordinary pendulum goes faster in cold, and slower in hot, weather. Various contrivances have been devised for diminishing, if not destroying, these effects. The most perfect in theory, though perhaps not the most available in practice, is that of Sir D. Brewster (q.v.), founded on the experimental discovery of Mitscherlich, that some crystals *expand* by heat in one direction, while *contracting* in the perpendicular one; therefore, that a rod may be cut out of the crystal in such a direction as not to alter in length by change of temperature. In

## PENDULUM.

the method of correction usually employed, called *compensation*, advantage is taken of the fact that different substances have different coefficients of linear dilatation; so that if the bob of the pendulum be so suspended as to be raised by the expansion of one substance, and depressed by the expansion of another, the lengths of the effective portions of these substances may be so adjusted that the raising and depression, taking place simultaneously, may leave



Fig. 3.

the position of the bob unaffected. There are two common methods of effecting this, differing a little in construction, but depending ultimately on the same principle. Of these, the *mercurial* pendulum is the more easily described. The rod AC, and the framework CB, are of steel. Inside the framework is placed a cylindrical glass jar, nearly full of mercury, which can be raised or depressed by turning a nut at B. By increase of temperature, the steel portion AB is lengthened by an amount proportional to its length, its coefficient of linear dilatation, and the change of temperature, conjointly—and thus the jar of mercury is removed from the axis of suspension. But neglecting the expansion of the glass, which is very small, the mercury rises in the jar by an amount proportional to its bulk, its coefficient of cubical dilatation, and the change of temperature, conjointly. Now, by increasing or diminishing the quantity of mercury, it is obvious that we may so adjust the instru-

ment that the length  $\left(\frac{k^2}{h}\right)$  of the equivalent simple pendulum shall be unaltered by the change of temperature, whatever be its amount, so long as it is not great enough to sensibly change the coefficients of dilatation of the two metals. The screw at B has nothing to do with the *compensation*; its use is to adjust the length of the pendulum so that it shall vibrate in one second.

The construction of the *gridiron* pendulum will be understood from the cut. The black bars are steel, the shaded ones are brass, copper, or some substance whose coefficient of linear dilatation is more than double that of steel. It is obvious from the figure that the horizontal bars are merely connectors, and that their expansion has nothing to do with the vibration of the pendulum—so they may be made of any substance. It is easily seen that an increase of temperature lowers the bob by expanding the steel rods, whose effective length consists of the sum of the lengths of Aa, BC, and the steel bar to which the bob is attached; while it raises the bob by expanding the brass bars, whose effective length is that of one of them only; the other, as well as the steel rod bc, being added to the instrument for symmetry, strength, and stiffness only. If the effective lengths of steel and brass be inversely as their respective dilatation coefficients, the position of the bob is unaltered by temperature; therefore the pendulum will vibrate in the same period as before heating. This is on the sup-

## PENEDO—PENELOPE CRISTATA.

position that the weight of the framework may be neglected in comparison with that of the bob; if this weight must be taken into account, the requisite adjustments, though possible, are greatly more complex, and can only be alluded to here. Practically, it is found that a strip of dry fir-wood, carefully varnished, to prevent the absorption of moisture, and consequent hygrometric alterations of its length, is very little affected by change of temperature; and, in many excellent clocks, this is used as a very effective substitute for the more elaborate forms just described. To give an idea of the nicety which modern astronomy requires in the construction of an observing clock, we may mention that the



Fig. 4.

Russian astronomers find the gridiron superior to the mercurial pendulum; because differences of temperature at different parts of the clock-case (though almost imperceptible in a properly protected instrument) may heat the steel or the mercury unduly in the latter; while, in the former, the steel and brass bars run side by side through the greater part of the length of the pendulum, and are thus simultaneously affected by any such alterations of temperature.

It would lead us into details of a character far too abstruse for the present work to treat of the effects of the hydrostatic pressure and viscosity of the air upon the motion of a pendulum.

**PENEDO**, *pā-nā'dō*: flourishing town of Brazil, province of Alagoas, near the mouth of the San Francisco. Pop. 9,000.

**PENELOPE**, *pē-nēl'ō-pē*, in Homeric Legend: wife of Ulysses (Odysseus), and mother of Telemachus, who was still an infant when Ulysses went to the Trojan war. During the long wanderings of Ulysses after the fall of Troy, he was generally regarded as dead; and P. was vexed by the urgent suits of many lovers, whom she put off on the pretext that she must first weave a shroud for Laertes, her aged father-in-law. To protract the time, she undid by night the portion of the web which she had woven by day. When the suitors had discovered this device, her position became more difficult than before; but fortunately Ulysses returned in time to rescue his chaste spouse from their distasteful importunities. Later tradition represents P. in a very different light, asserting that by Hermes (Mercury), or by all her suitors together, she became mother of Pan (q.v.), and that Ulysses, on his return, divorced her in consequence. But the older Homeric legend is the simpler and more genuine version.

**PENEL'OPE CRISTA'TA**: see **GUAN**.

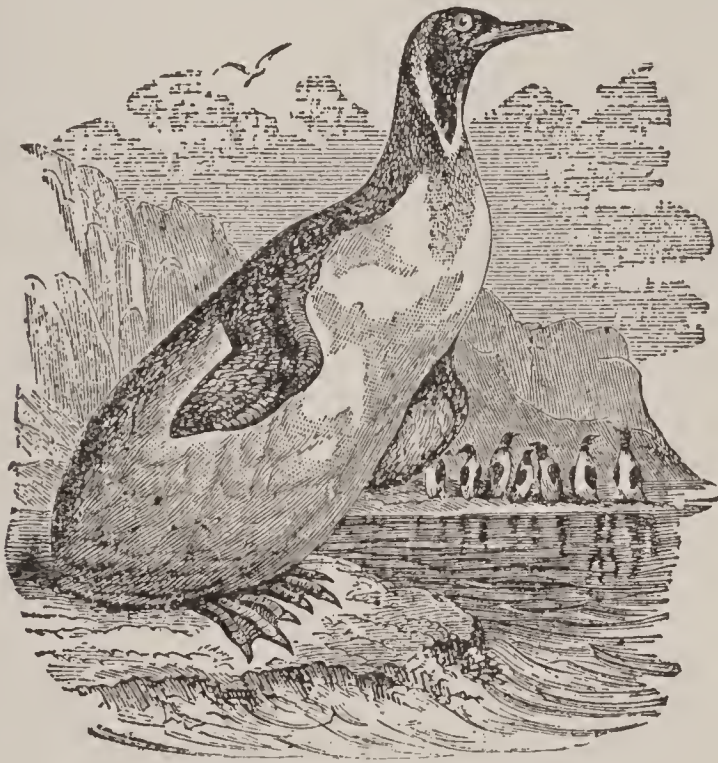
## PENETRATE—PENGUIN.

**PENETRATE**, *v.* *pěn'ě-trāt* [L. *penetrātus*, entered or pierced into—from *penētro*, I pierce into: It. *penetrare*: F. *pénétrer*]: to pierce or enter; to pass into the interior; to affect the mind or feelings; to understand; to reach or to find; to make way. **PEN'ETRATING**, *imp.*: **ADJ.** having the power to enter; sharp; piercing; quick to understand; acute. **PEN'ETRATED**, *pp.* **PEN'ETRA'TION**, *n.* *-trā'shìn* [F.—L.]: the act of entering; acuteness; discernment. **PEN'ETRABLE**, *a.* *-trā-bl* [F. *pénétrable*—from L. *penetrabilis*, that can be pierced]: that may be penetrated or pierced; susceptible of moral or intellectual impressions. **PEN'ETRABLY**, *ad.* *-blī*. **PEN'ETRABIL'ITY**, *n.* *-bil'ī-tī*, the susceptibility of being entered or passed through by another body. **PEN'ETRA'LIA**, *n. plu.* *-trā'li'ā* [L.]: interior parts; hidden things or secrets. **PEN'ETRANT**, *a.* *-trānt*, having power to enter or pierce. **PEN'ETRANCY**, *n.* *-sī*, the power of entering or piercing. **PEN'ETRATINGLY**, *ad.* *-lī*. **PEN'ETRATIVE**, *a.* *-trā-tiv*, that pierces; having the power to impress the mind; sharp; acute. **PEN'ETRATIVELY**, *ad.* *-lī*. **PEN'ETRATIVENESS**, *n.* *-nēs*, the quality of being penetrative.—**SYN.** of 'penetration': sagacity; discrimination; sharpness; judgment; discretion.

**PENGUIN**, *n.* *pěn'gwīn* [F. *pinguin*, or *pingouin*, which has been said to come from L. *pinguis*, fat, plump—more probably a word of S. Amer. origin]: a sea-fowl with short wings, incapable of flight, found in the southern seas: a W. Indian fruit, *Bromēliā pinguin*, ord. *Bromel'iācēæ*, used as a vermifuge in the W. Indies. *Note.*—**PENGUIN** has a striking resemblance to W. *pen-gwen*—from *pen*, head, and *gwen*, white; the head of the penguin, however, is 'black,' not 'white.' This difference may be accounted for by supposing that the name was transferred from some similar bird which had a white head—see *Skeat*.—*Penguin* (*Aptenodytes*) is a genus of birds of family *Alcidæ* (see **AUK**), or constituting the family *Aptenodidæ*, regarded by many as a sub-family of *Alcidæ*, and divided into several genera or sub-genera. They have short wings, quite unfit for flight, but covered with short rigid scale-like feathers, admirably adapted for swimming, and much like the flippers of turtles. The legs are very short, and are placed very far back, so that on land penguins rest on the tarsus, which is widened like the sole of the foot of a quadruped, and maintain a perfectly erect posture. Their bones, unlike those of birds in general, are hard, compact, and heavy, and have no air-cavities; those of the extremities contain an oily marrow. The body is of an elliptical form; the neck of moderate length; the head small; the bill moderately long, straight, more or less compressed; the tail very short. Some have a long, slender, and pointed bill, the upper mandible a little curved at the tip, and feathered for about a third of its length; some, called sometimes Gorfews or Gorfous (*Chrysocoma*), have a stout and pointed bill, a little curved at the tip; some, Sphenisques or Spheniscans (*Spheniscus*), have a straight and compressed bill, irregularly furrowed at the base. All the penguins are among the most aquatic birds, though they

## PENGUIN.

are seldom seen very far out at sea; but it is only in the breeding-season that they spend much time on shore. They are found only in the s. hemisphere, chiefly in high s. latitudes, though some of the species extend into warm regions, as *Spheniscus Humboldtii* to the coast of Peru. Of this species, called *Paxaro niño*, or Child Bird, by the Peruvians, Tschudi states that it is easily tamed, becomes very sociable, and follows its master like a dog, waddling along in a very amusing manner with its plump body and short legs, keeping its balance by motions of its little wings. It has considerable intelligence, and learns to answer to its name. In some of the furthest antarctic regions, penguins are prodigiously numerous, appearing on the shore like regiments of soldiers, or, according to another similitude used by a voyager, like bands of little children in white aprons. They often occupy for their breeding-ground a space of several acres, laid out and levelled and divided into squares, as nicely as if it had been



Penguin (*Aptenodytes pennatis*).

done by a surveyor; while between the compartments they march as accurately as soldiers on parade. The KING P. (*A. Patagonica*), a large species, of the size of the great auk, dark grayish blue above, white beneath, with a black head and a yellow curved band on the throat, is found in such numbers on some of the sandy antarctic coasts, that Bennett describes one breeding-ground on Macquarie Island as covering 30 or 40 acres, and, to give some notion of the multitudes, speaks of 30,000 or 40,000 birds as continually landing, and as many putting to sea. On many of the antarctic shores the penguins do not flee from nor seem to dread the presence of man, remaining as if stupidly indifferent, even when their companions are knocked on the head; their very indifference, it is said,

PENHALLOW—PENITEN'T.

suggesting the idea of loneliness and desolation more powerfully than if there were total absence of life. When attacked, however, they often show courage in self-defense, and are ready to run with open bill at an invader. The young are reckoned good eating; the old are said to be black and tough. Penguins make no nest, but lay a single egg in a chosen place on the shore; and the egg is carefully tended both by male and by female. The female P. keeps charge of her young nearly 12 months.—Many of the penguins are birds of bright plumage.—Cuttle-fish, and other *Cephalopoda*, form a great part of their food. Their voice is loud and harsh, between a quack and a bray.

PEN'HALLOW, SAMUEL: 1665–1726: emigrant to Mass. from England 1686, with Charles Morton. He removed to Portsmouth, N. H., and became treasurer of the province, and 1717 chief-justice. He wrote *History of the Indian Wars of New England from 1703–1726*.

PENICIL, n. *pěn'ĩ-sĩl* [L. *penicil' lum*, a roll of dry lint]: a pledget or portion of dry lint for wounds or ulcers; a species of shell. PEN'ICIL' LATE, a. *-sĩl' lāt*, pencilled; in *bot.*, consisting of a bundle of short close fibres of diverging hairs; applied to a tufted stigma resembling a camel's-hair pencil, as in the nettle. PEN'ICILLA'RIA (see GUINEA CORN: MILLET).

PENICILLIFORM, a. *pěn-ĩ-sĩl'ĩ-fawrm* [L. *penicil' lum*, a pencil; *forma*, shape]: pencil-shaped.

PENIKESE' ISLAND: see ELIZABETH ISLANDS.

PENINSULA, n. *pě-nĩn'sũ-lǎ* [L. *penin'sũlǎ*, a peninsula—*from pene*, almost; *insũla*, an island: It. *penisola*: F. *péninsule*]: a portion of jutting land almost surrounded by the sea; a name specially applied to Spain and Portugal united. PENIN'SULAR, a. *-sũ-lěr*, pertaining to or formed as a peninsula. PENIN'SULATE, v. *-lāt*, to form into a peninsula. PENIN'SULATING, imp. PENIN'SULATED, pp.: ADJ. almost surrounded by water.

PENIS, n. *pě'nĩs* [L.]: the male organ of generation.

PENITENT, a. *pěn'ĩ-těnt* [OF. *penitent*; L. *pœnitens* or *pœnitentem*, repenting, ruing—from *pœna*, punishment: It. *penitente*]: sorrowful in heart on account of sins and faults; contrite: N. one who is sorrowful on account of his transgressions: one lying under ecclesiastical censure, but admitted to do Penance (q.v.); one who is under the direction of a confessor. PEN'ITENTLY, ad. *-lĩ*. PEN'ITENCE, n. *-těns*, sorrow or grief of heart for sins; remorse; contrition. PEN'ITEN'TIAL, a. *-těn'shǎl*, expressing penitence, or proceeding from it: N. in the *R. Cath. Chh.*, a book treating on the manner and degrees of penance. PEN'ITEN'TIALLY, ad. *-lĩ*. PEN'ITEN'TIARY, n. *-shǎr-ĩ*, one who prescribes rules and degrees of penance: one who does penance: a place where penance was done: prison or house of correction for training offenders with a view to their reformation (see PENITENTIARIES: also PRISONS): a secret ecclesiastical office of the court of Rome (see below): ADJ. relating to the rules and measures of penance.—SYN. of 'penitence': repentance; compunction; contrition; regret; pain.

## PENITENTIAL PSALMS—PENITENTIARIES.

**PENITENTIAL PSALMS:** seven of the Psalms of David, so called as being specially expressive of sorrow for sin, and accepted by Christian devotion as forms of prayer suitable for the repentant sinner. They are Psalms vi., xxxii., xxxviii., li., cii., cxxx., and cxliii. according to the Authorized Version, which correspond with vi., xxxi., xxxvii., l., ci., cxxix., and cxlii. of the Vulgate. These Psalms have been set apart from a very early period, and are referred to as such by Origen (Hom. ii. in Leviticum). Pope Innocent III. ordered that they should be recited in Lent. They have a special place in the Roman Breviary, and more than one of the popes attached an indulgence to the recital of them. The most deeply penitential, and the most frequent in use, is Psalm li., or the *Miserere*.

**PENITENTIARIES:** originally, in England, institutions for reception of women, erring but penitent, in which confinement is purely voluntary. The name has been applied also to prisons under the separate system, having been adopted by the Quakers in Penn. 1786, when they caused the legislature of that state to abolish the punishments of death, mutilation, and the whip, and to substitute solitary confinement as a reformatory process. The term P. now in the United States denotes a place of penal servitude, a prison in which criminals are compelled to work. (See CONVICT: PRISONS.) The P. of the first-mentioned kind are known usually as Magdalen Asylums or Female Refuges (see MAGDALENE, MARY). Most of the institutions of this kind in the United Kingdom are associated under the auspices of the Reformatory and Refuge Union, an association which embraces also reformatories, industrial schools, and like institutes. The Union has on its list between 60 and 70 P. or homes for fallen women in England (15 in London), and 12 in Ireland and Scotland. In the Magdalen asylums, the inmates remain in strict seclusion for periods varying from a few months to two years, the average time being about a year; they then return to their friends, or to situations provided for them. It is an invariable rule not to dismiss any, except the entirely incorrigible, without seeing that they are provided with the means of honest subsistence. During their seclusion they are employed in needle-work, washing, and housework. Most of the provincial and metropolitan establishments have been created in recent years. The oldest institution is the London Magdalen Hospital (with room for 140), opened 1758; the next that of Dublin (for 20 persons), in 1766; the Edinburgh Magdalen Asylum (with room for 70), in 1797. All the rest (including a large one at Glasgow, with accommodation for 146) have been founded in the 19th c. During the last hundred years the London Magdalen committee state that they have found from their extensive experience that 70 per cent. are permanently reformed. All the institutions can show a very large percentage restored to their friends and to society.—In the United States there are efficient and useful institutions of this kind; but, as far as now known, they are not associated in a Union.

## PENITENTIARY—PENN.

**PENITENTIARY** [L. and It. *penitentiariæ*]: name given to one of the offices of the Roman court, also to the dignitary (a cardinal called *Penitentiarius*) who presides over it. The cardinal P. must be a priest and a doctor of theol. or canon law. He is named by the pope himself, and should the P. die while the Roman see is vacant, the cardinals must be specially assembled to elect by secret scrutiny a pro-P. to act for the time. The officials of the P., under the cardinal P., are a regent, three secretaries, three clerks, a corrector, a consulter in theol., another in canon law, and one or two minor officers. The subjects which come under the notice of the P. are all matters relating to the confessional, especially the absolution from sins and from canonical censures, reserved to the pope, and in certain cases dispensations from the impediments of marriage.

**PENJDEH**, *pěnj-deh*, or **PUNJ DEEN**, *pŭnj dēn*: oasis in Afghanistan; lat. 36° 4' n., long. 62° 41' e.; seat of a Turkoman camp, 130 m. n. of Herat. It is of irregular form, about 27 m. in extreme length and 20 m. in extreme breadth; about 300 sq. m. Its importance is derived from its location in the long-disputed boundary region between England and Russia. Its seizure by the Russians 1885, Mar. 30, led to elaborate preparations for war; but after various conferences a treaty was arranged 1887 by which the Russians were allowed to remain in possession. The people keep large flocks, and are expert in manufacture of cloth and carpets. Pop. about 8,000.

**PENMAN** and **PENMANSHIP**: see under **PEN 1**.

**PENN, JOHN**: 1729, July 14—1795, Feb. 9; b. London, grandson of William P., the founder. After studying at Geneva, he came to Penn., was made a member of the council 1753, was lieut. gov. of the colony 1763-71, gov. 1773-75. He refused to recognize the govt. instituted by the constitutional convention, and claimed to be neutral throughout the revolution. He died in Bucks co., Penn.

**PENN, JOHN**: 1741, May 17—1788, Sep.; b. Caroline co., Va. After spending a few years at a country school, he entered the law office of Edmund Pendleton as a student, and was admitted to practice 1762. He removed to N. C., was a member of the continental congress, signed the Declaration of Independence, and afterward served two terms in congress. The later years of his life were spent on his estate in N. C.

**PENN, JOHN, LL.D.**: 1760, Feb. 23—1834, June 21; b. England; grandson of William P., the founder. He studied at Cambridge, and on the death of his father, Thomas P., 1775, became gov. of the colony of Penn., but soon lost his position by the revolution. He returned to England, was a member of parliament, and published a vol. of poems and several other works.



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**PENN, RICHARD:** 1735-1811, May 27; b. England. bro. of Gov. John P., and son of William P., the founder. He studied at Cambridge, came to Penn. 1763, returned to England, but came back as lieut. gov. of the colony 1771, and held the office about two years with great acceptance to the people. He was member of parliament 1796-1806, and returned to Philadelphia 1808, but died in England.

**PENN, THOMAS:** 1702-1775, Mar. 21; b. England; son of William P., the founder. He came to Penn. 1732, and was manager of the colony till 1741. He inherited a vast estate, made large contributions to benevolent societies, and founded the Pennsylvania College. When nearly fifty years of age he married a lady of rank in England. He died in London.

**PENN, WILLIAM:** English Quaker and philanthropist, founder of the colony of Pennsylvania: 1644, Oct. 14-1718, July 30; b. London; son of Sir William P., eminent English admiral (1621-70, b. Bristol, England). His early years were spent partly in Essex and partly in Ireland, where his father had several estates. P. studied at Christ-Church, Oxford, and while there was converted to Quakerism by the preaching of Thomas Loe, a disciple of George Fox. His enthusiasm for his new faith assumed a pugnacious form. Not only did he object personally to attend the services of the Church of England, and to wear the surplice of a student—both of which he considered eminently papistical—but, with some companions who also had become Quakers, he attacked several of his fellow-students, and tore the obnoxious robes from their backs. For this unseemly procedure, P. was expelled from the university. His father was so excessively annoyed at his conduct, that he gave P. a beating, and turned him out of doors; but he soon afterward mollified, and sent his son to travel on the continent, in the hope that change of scene and the gayety of French life would change the bent of his mind. They failed, however, to effect this, but the youth certainly acquired a grace and suavity of address that he did not before possess. In 1666 the admiral sent him to Ireland to look after his estates in the county of Cork, which P. did to his father's complete satisfaction; for in matters of business he was as practical an Englishman as in religion he was an out-and-out mystic. In the city of Cork, however, he again fell in with Thomas Loe, and for attending a Quaker meeting was, with some others, imprisoned by the mayor, but was immediately released on appealing to the lord pres. of the council of Munster, who was personally acquainted with him. On his return to England, P. and his father again quarrelled, because the 'conscience' of the son would not allow him to take off his hat to anybody—not even to the king, the Duke of York, or the admiral himself. P. was again turned out of doors by his perhaps testy, but assuredly provoked, parent. The mother, however, stepped in, and smoothed matters so far that P. was allowed to return home; and the admiral even exerted his influence with the govt. to

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wink at his son's attendance at the illegal conventicles of the Quakers, which nothing would induce him to give up. In 1668, however, he was thrown into the Tower, on account of a publication entitled *The Sandy Foundation Shaken*, in which he attacked the ordinary doctrines of the Trinity, God's 'satisfaction' in the death of Christ, and justification by the imputation of Christ's righteousness. While in prison he wrote the most famous and popular of his books, *No Cross, No Crown*, and *Innocency with her Open Face*, a vindication of himself, which contributed to his liberation, which was obtained through the interference of the Duke of York. 1670, Sep., Admiral P. died, leaving his son an estate of £1,500 a year, together with claims upon government for £16,000. In 1671 the upright but incorrigible sectary was again committed to the Tower for preaching; and as he would not take an oath at his trial, he was sent to Newgate for six months. Here he wrote four treatises; one, entitled *The Great Cause of Liberty of Conscience*, is an admirable defense of the doctrine of toleration. After regaining his liberty he visited Holland and Germany, with Fox and Barclay, for the advancement of Quakerism. The Countess-Palatine Elizabeth, granddaughter of James I., showed him particular favor. On his return, he married, in the beginning of 1672, Gulielma Maria Springett, daughter of Sir William Springett, and for some years thereafter continued to propagate, by preaching and writing, the doctrines of his sect. Circumstances having turned his attention to the new world, he, 1681, obtained from the crown, in lieu of his monetary claim upon it, a grant of the territory now forming the state of Pennsylvania. P. wanted to call it Sylvania, on account of its forests; but the king (Charles II.) good-humoredly insisted on the prefix Penn. P.'s great desire was to establish a home for his co-religionists in the distant West, where they might preach and practice their convictions in unmolested peace. With several friends he sailed for the Delaware 1682, Aug.; was well received by the settlers, and Nov. 30 held his famous interview with the Indian tribes, under a large elm-tree at Shackamaxon, now Kensington. He next planned and named the city of Philadelphia, and for two years governed the colony in the wisest, most benevolent, and liberal manner. Not only Quakers, but persecuted members of other religious sects, sought refuge in his new colony, where, from the first, the principle of toleration was established by law. Having called the colonists together, he gave the infant state a constitution in 24 articles. Toward the end of the reign of Charles II., P. returned to England to exert himself in favor of his persecuted brethren at home. His influence with James II.—an old friend of his father's—was so great, that many people then, and some even yet, do not feel quite satisfied about the nature of their relations; but the suspicion that he allowed himself to be used as a tool by the court is really not justified by any known facts. It is a possible suspicion (for his position was equivocal), but it is not proven; and Lord Macau-

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lay—who with ungracious animosity has urged the view of his complicity in some of the disgraceful incidents that followed Monmouth's rebellion—has been fully convicted of haste and inaccuracy in several important particulars. At any event, P.'s exertions in favor of the Quakers were so far successful, that 1686 a proclamation was issued to release all persons imprisoned on account of their religious opinions, and more than 1,200 Quakers were set free. In April following, James issued an edict for repeal of all religious tests and penalties, but the mass of Nonconformists mistrusted his sincerity, and refused to avail themselves of it. After the accession of the Prince of Orange as William III., P. was twice accused of treason, and of corresponding with the exiled monarch, but was acquitted. In 1690 he was arrested on a charge of conspiracy, but was again acquitted. Nevertheless, in the following year, the charge was renewed. Nothing appears to have been done for some time, but P. at last, through the kindly offices of his friends, Locke, Tillotson, and others, had the matter thoroughly investigated, and he was finally and honorably acquitted 1693, Nov. Shortly afterward his wife died, but in less than two years he married again. His second wife, Hannah Callowhill, was a Bristol lady. In 1699 he made a second visit to the new world, and found Pennsylvania in a prosperous condition. His stay, which lasted two years, was marked by many useful measures, and by efforts to ameliorate the condition both of the Indians and of the negroes. P. departed for England toward the end of 1701, leaving the management of his affairs to a Quaker agent named Ford, whose villainy virtually ruined Penn. When the rogue died, he left to his widow and son false claims against his master, and these were so ruthlessly pressed, that P. allowed himself to be thrown into the Fleet 1708, to avoid extortion. His friends afterward procured his release, but not till his constitution was greatly impaired. He died at Ruscombe, in Berkshire, leaving issue by both marriages. Upon the P. controversy it is unnecessary further to enter. We refer our readers to Macaulay's *History of England* (1849-55); Hepworth Dixon's *Life of Penn* (new ed. 1856); J. Paget's *Inquiry into the Evidence of the Charges brought by Lord Macaulay against William Penn* (1858); and Stoughton's *William Penn* (new ed. 1883).

## PENNALISM.

**PENNALISM**, *pɛn'näl-izm*: practice formerly prevalent in the Prot. universities of Germany, which seems to have been essentially the same as the Fagging (q.v.) of the English public schools. The freshmen or students of the first year (called *pennals*—i.e., *pen-cases*; fags) were considered by the elder students ('schorists') as virtually their servants. Whatever property the pennals had they must give up to the schorists, who employed them in the meanest offices, made laughing-stocks of them, and beat and ill-used them—all which had to be endured without complaint. After a year of this discipline followed the ceremony of 'deposition'—a practice older than P. itself, borrowed probably from knightly consecration—in which the pennal underwent a number of symbolical trials, indicative generally of purgation from impurity, and consecration to an intellectual life, after which he took his turn in maltreating his juniors. P. is said to have been introduced in the beginning of the 17th c., and to have been mostly confined to the Prot. universities of Germany. But though the full development of the system may have been thus restricted, germs and modifications of it were much earlier and more general, as is manifest from the prevalence of names of contempt for first year's students (see **BEJAN**), and from statutes passed by French universities as early as the middle of the 14th c., against levying payments for first footing from them: see also **FAGGING**. The servitude imposed on the pennals was probably an aping of the usage of chivalry, by which a candidate for knighthood had to serve for a time as page to one already a knight. All attempts to check the evils of P. were long unavailing, as the pennals took part with the schorists in resisting all regulations of the authorities, which would have deprived them of the hope of exercising in their turn a like tyranny upon others. Edicts against the practice were issued in Jena and other universities about the beginning of the 17th c., but it was not till the last half of that century that the universities, by uniting in severe measures, were able to check the evil; and traces of it survived for a long time afterward. In imitation of the students, a kind of P. was adopted by other bodies, particularly by the printers, who retained the ceremony of 'deposition' after it had disappeared from the universities.—Schöttgen, *Historie des Penälwesens* (Dresd. 1747).

## PENNANT.

PENNANT, n. *pěn'nănt*, or PENNON, n. *pěn'nôn* [F. *pennon*—from It. *pennone*; Sp. *pendon*, a pointed flag formerly borne at the end of a lance—from L. *penna*, a feather, a wing; It. *pinna*, the flat flap of anything]: narrow flag of great length, tapering to a point, and carried at the head of the principal mast in a govt. ship, to show that she is in commission: a small flag (see PENNON). PENNONCEL, or PENNONCELLE, n. *-sěl* [OF. *pennoncel*; It. *pennoncello*, a little plume or banner]: small pennon, as of a spear or lance; dim. of *Pennon* or *Pennant*.

In the U. S. navy an admiral carries a blue flag with 4 white stars at the head of the mainmast; a vice-admiral a blue flag with 3 white stars at the fore; a rear-admiral a blue flag with 2 white stars at the mizzen; but when two or more admirals of the same grade meet, the senior flies a blue flag, the next a red, the rest white flags. A commodore has a broad blue P. bearing a single white star; this is borne at the main when the commodore is acting as commander-in-chief; when 2 or more commodores meet, the senior flies a blue P., the next a red, the others white pennants. Officers not entitled either to a flag or to a broad pennant show, when commanding a vessel, a narrow P. at the main. Any commanding officer of grade above that of lieut.-commander is entitled to carry on a staff at the bow of his boat a flag or pennant similar to that borne at the mast-head of his vessel.

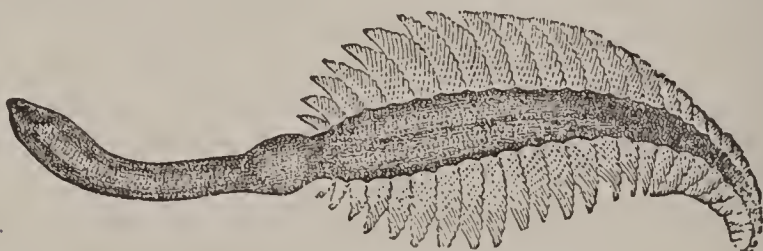
In the British navy the pennants are borne of three colors—red, white, or blue—according to the color to which the admiral commanding the fleet pertains: see FLAG (FLAG-OFFICER): also PENDANT. A *broad pennant* is a blue pennant, shorter and broader than the above, carried at the mast-head of a commodore's ship, to denote that her captain is the commodore on the station. A first-class commodore hoists his broad pennant at the fore; if of the second class, his flag flies at the mizzen.

PENNANT, *pěn'nănt*, THOMAS, LL.D.: tourist, naturalist, and antiquary: 1726, June 14—1798, Dec. 16; b. Downing, in Flintshire, Wales. He was educated at Queen's and Oriel Colleges, Oxford. His first important publication was *British Zoology* (1761–69), which contained 132 plates on imperial paper, engraved by Mazel, and established his reputation. In 1769 he made the first of his famous tours to the remotest parts of Scotland, publishing his report 1771. In 1770 he added 103 plates to his *British Zoology*, with descriptive notices; and 1771 printed at Chester *Synopsis of Quadrupeds*, subsequently enlarged and improved under the title *History of Quadrupeds*. In 1772 he undertook his second and most important tour in Scotland, which included a voyage to the Hebrides (an account of which appeared in 3 vols. 1775). In 1773 he published *Genera of Birds*, and made an antiquarian tour through n. England. In 1777 appeared Vol. IV. of *British Zoology*. Among a variety of miscellaneous publications is his amusing life of himself (*The Literary Life of the late Thomas Pennant, Esq., by himself*, 1793).

## PENNATE—PENNIGEROUS.

**PENNATE**, a. *pěn'nāt*, or **PINNATE**, a. *pĭr'nāt* [L. *pennātus*, feathered—from *penna*, a feather or wing]: in *bot.*, feathered—applied to leaflets that are arranged on opposite sides of a common petiole.

**PENNATULA**, *pěn-nāt'ū-la*: genus of zoophytes (*Anthozoa*), allied to *Gorgonia* (q.v.) and *Alcyonium* (q.v.), and having very similar polyps; but the polyp mass is not fixed by its base, and has a fleshy stem strengthened by a bone, and a skin containing calcareous spiculæ, the upper part of the stem winged on two sides, with numerous pinnæ, along the upper margins of which the polyp cells are ranged. The whole form somewhat resembles a quill, so that the popular name **SEA PEN** is often given to these zoophytes. One species, *P. phosphorea*, common on northern British coasts, is two to four inches in length, of purplish-red color, and, like many—perhaps all—of the species, is sometimes brilliantly phosphorescent when disturbed. The stalk is hollow in the centre, and the bone which it contains—composed of phosphate and carbonate of lime, like the bones of the vertebrate animals—is a remarkable part of its structure, not extending the whole length of the stalk, slender, straight, and perfectly simple, but bent backward at each end into a hook. Other species are found in the Mediterranean and other seas, some of them more pen-like than



*Pennatula (Virgularia mirabilis).*

even the British one. It has been alleged that they swim by contractions and dilatations of their common fleshy substance, or by movements of the pinnæ; but there is no good evidence of their possessing such power of locomotion, which is contrary to the analogy of all similar zoophytes; and probably the opinion prevalent among Scottish fishermen is correct, that their natural place is at the bottom of the sea, with the somewhat flexible lower end of the stalk immersed in mud. Nearly allied to the pennatulæ is another genus of extremely beautiful zoophytes, *Virgularia*, ranked with them in the family *Pennatulidæ*, and sometimes receiving the popular name **SEA RUSH**. One species, *V. mirabilis*, resembles a slender rod, bearing throughout the greater part of its length of 6–10 in. two rows of lobes, along the margin of which the polyps are arranged.

**PENNIFORM**, a. *pěn'nĭ-fawrm* [L. *penna*, a feather; *forma*, a shape]: shaped like a quill or feather; in *anat.*, applied to muscles of which the fibres pass out on each side from a central tendon.

**PENNIGEROUS**, a. *pěn-nĭj'ēr-ūs* [L. *penna*, a feather-gero, I carry]: bearing feathers or quills,

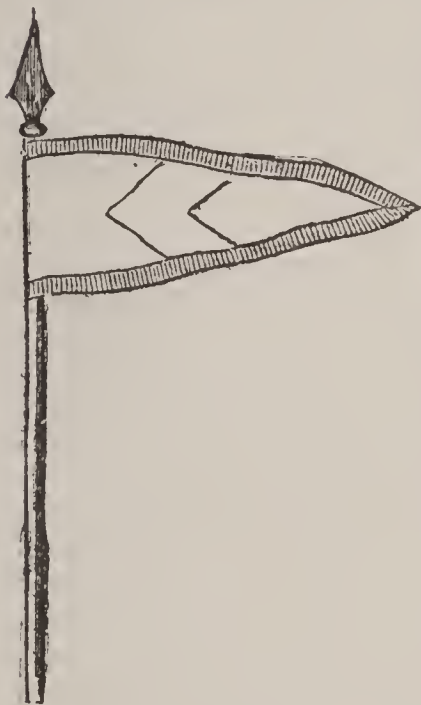
## PENNILESS—PENNON.

**PENNILESS**: see under **PENNY**.

**PENNINERVED**, a. *pěn'nĭ-nĕrvd* [L. *penna*, a feather; *nervus*, a nerve]: in *bot.*, applied to leaves which have the nerves or veins arranged like the parts of a feather.

**PENNINGTON**, *pěn'ing-ton*, **WILLIAM SANFORD**: 1757-1826, Sep. 17; b. Newark, N. J. He was a major in the revolution, studied law, began practice 1802, served in the state legislature, became assoc. justice of the N. J. supreme court 1804, and was U. S. dist. court judge 1815-26. He was gov. of the state 1813-15, and for a considerable time was chancellor. He published a vol. of *New Jersey Supreme Court Reports*. He died at Newark.

**PENNOCK**, *pěn'nok*, **ALEXANDER MOSELY**: 1813, Nov. 1-1876, Sep. 20; b. Norfolk, Va. He entered the navy 1828, served in the Pacific squadron and later in the Brazil squadron, was inspector of light-houses 1853-56, and was in the Paraguay expedition 1859-60. He was fleet-capt. of the Mississippi squadron 1861-64, and after serving at the Brooklyn navy-yard was connected with the European squadron. He was promoted lieut. 1839, commander 1855, capt. 1863, commodore 1868, rear-admiral 1872. He died at Portsmouth, N. H.



**Pennon.**

**PEN'NON** [see **PENNANT**]: small, pointed, or swallow-tailed flag, carried by the mediæval knight on his lance, bearing his personal device or badge, and sometimes richly fringed with gold. The device was so placed as to appear in its proper position when the weapon was laid for the charge.

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**PENNSYLVANIA**, *pĕn-sĭl-vā'nĭ-a*: state; one of the 13 original states in the American Union; ranking (1880) 1st in coal, iron, steel, petroleum, and rye; 2d in population, wealth, manufactures, buckwheat, potatoes, and printing and publishing; 3d in milch cows, hay, soap, and railroad mileage; 4th in oats and tobacco; 5th in value of agricultural products, silk goods, malt and distilled liquors: in 1900, still second in population, popularly known as the 'Keystone' state.

*Location and Area.*—P. is in lat.  $39^{\circ} 43'$ — $42^{\circ} 15'$  n., long.  $74^{\circ} 43'$ — $80^{\circ} 31'$  w.; bounded n. by Lake Erie and N. Y., e. by N. Y. and N. J., s. by Del., Md., and W. Va., w. by Lake Erie, W. Va., and O.; extreme length e. to w. 302.34 m.; extreme breadth n. to s. 175.6 m.; 45,215 sq. m. (28,937,600 acres); cap. Harrisburg.

*Topography.*—The s.e. portion is a level plain, gradually rising in the w. to an undulating, hilly tract; the interior ranges from hills to mountains; and the w. portion is, in the main, a rolling plateau. The surface rises from the Delaware river w. and n. to the South and Alleghany Mountains, which extend across the state from n.e. to s.w., ranging from 1,500—2,500 ft. high, and then slopes toward the Ohio river. The state is drained by the Delaware, Susquehanna, and Ohio rivers and their tributaries, and by the Genesee river and Lake Erie. The Delaware river forms the e. boundary, and is navigable for steamships to Philadelphia, large steamboats to Trenton, N. J. (head of tide-water), and small steamboats to Easton. The Susquehanna river drains the centre of the state and empties into Chesapeake Bay in Md., is not navigable for steamboats in P., but has great value for lumber rafting. The Ohio river is formed at Pittsburgh by the Allegheny and Monongahela rivers, which drain the entire w. portion of the state, and are each navigable for steamboats about 60 m. The Juniata is the principal tributary of the Susquehanna, and the Lehigh and Schuylkill rivers of the Delaware. P. has no lakes, but borders on Lake Erie for 45 m., and has an excellent harbor at Erie. The Delaware river contains several islands belonging to P., chief of which is League Island, used by the federal govt. for naval purposes; and the state also has 2 or 3 islands in Lake Erie.

*Climate.*—The climate ranges from very hot in the summer in the s. and e., to intense cold and long winters in the central, w., and n. portions, with mean annual temperature in the s.e.  $52^{\circ}$ , in the centre  $48^{\circ}$ , and in the n. and n.w.  $44^{\circ}$ ; average fall of rain and snow from 36 in. in the w. and n. to 45 in. in the s. and e.; climate generally very healthful.

*Geology.*—The principal formations are the azoic and eozoic rocks, in the s.e.; the mesozoic, extending into N. J. and Md.; and the paleozoic, ranging from the Potsdam sandstone to the coal-measures. Some drift is found in the n. and n.w. cos.; the tertiary and upper secondary formations do not occur on the w. of the Delaware river; and gneiss is confined to the s.e. cos., along the Delaware and Schuylkill rivers, and gives place to lower Silurian limestones, containing quarries of valuable white marble, and



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red sandstones, containing near Phoenixville mines of lead, copper, and nickel. Hematite iron ore abounds in the lower Silurian formations; petroleum in the upper Devonian; and salt beneath the coal-measures in the w. The economic properties, besides those mentioned, are granite, brownstone, trap, marbles, zinc, copper, tin, sulphur, fire-clay, some native gold and silver, and numerous mineral springs of high medicinal value. For production of coal, iron, steel, petroleum, natural gas, and slate, see below. P. is exceedingly rich in forests, which contain white pine, hemlock, several species of oak, beech, spruce, fir, cedar, hickory, whitewood, maple in large variety, chestnut, locust, sycamore, elm, catalpa, ash, cherry, and black walnut.

*Zoology.*—The mountain regions contain a large number of wild animals, among them bears, panthers, wild cat, lynx, wolf, porcupine, red and gray foxes, raccoon, Virginia deer, and some elk. The marten, mink, beaver, skunk, opossum, woodchuck, and musk-rat are abundant. Small game includes several varieties of squirrel and rabbit. Among birds are bald and golden eagles, hawks in variety, turkey-buzzards, owls, whip-poor-wills, and the usual birds of song and plumage common to the latitude.

*Agriculture.*—In 1890 P. had 211,557 farms of a total acreage of 18,364,370, or an average of 87 acres per farm; improved 13,210,597 acres, or 71.9 per cent. of the total; of these farms 69,177 were under 50 acres, 66,743 from 50 to 100 acres, 74,880 from 100 to 500 acres, 606 from 500 to 1,000, 151 over 1,000 acres; 162,219 were cultivated by the owners and 49,338 hired; value of land, fences and buildings \$922,240,233, improvements and machinery \$39,046,555, farm products for the year \$121,328,348, fertilizers purchased \$3,384,310; live stock on June 1, \$101,652,758 as follows: horses 618,660, mules and asses 29,563, oxen 17,364, milch cows 927,254, other cattle 761,800, swine 1,278,029, sheep, not including spring lambs, 1,612,107; their products were: wool 1,226,669 fleeces, 6,441,164 lbs., milk 368,906,480 gals., butter 76,809,641 lbs., cheese 439,060 lbs.; there were 10,381,781 chickens and 999,604 other fowl, egg production 50,049,915 dozen. Principal products: barley, 20,950 acres, 493,893 bu.; buckwheat, 210,488 acres, 3,069,717 bu.; Indian corn, 1,252,369 acres, 42,318,279 bu.; oats, 1,310,197 acres, 36,197,409 bu.; rye, 336,041 acres, 3,742,164 bu.; wheat, 1,318,472 acres, 21,595,499 bu.; hay, 3,323,689 acres, 4,331,582 tons; tobacco, 26,955 acres, 28,956,247 lbs.; Irish potatoes 12,899,315 bu.

The number of farms 1900 was 224,248; averaging 86.4 per acre; total acreage 19,371,015; of these 41,575 were under 50 acres; 153,031 were cultivated by their owners; value property \$1,051,629,173, of which \$63,213,145 represented live stock; value all products \$207,895,600; of all dairy products \$35,860,110; bushels of wheat 20,632,680; of corn, 51,869,780; tons of hay, 4,020,388.

*Manufactures.*—In 1900 P. had 52,185 manufacturing establishments, with 1,551,548,712 capital, 733,834 employees, \$5,307,470 wages, \$1,042,434,599 materials, \$1,834,860 products. For leading industries see table.

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INDUSTRIES.	Establishments.	Capital.	Employees.	Wages.	Materials:	Products
Agricultural implements.....	50	\$4,102,327	1,564	\$ 688,044	\$ 1,232,242	\$ 3,198,471
Bags, other than paper.....	3	41,250	29	10,425	85,220	130,208
Boots and shoes, factory product.....	146	6,860,480	9,144	3,111,113	8,158,589	13,235,933
Brass castings and brass finishing.....	58	2,796,234	961	495,638	2,604,188	3,862,135
Brick and tile.....	385	10,506,823	6,733	2,626,291	1,137,944	5,954,415
Bridges.....	12	4,136,499	1,999	1,201,192	3,867,058	6,991,565
Carpets and rugs, other than rag.....	93	17,957,607	12,919	5,330,643	13,773,788	23,113,058
Cars, railroad, and repairs.....	144	19,182,001	28,554	15,825,640	23,147,574	43,065,171
Cheese, butter and condensed milk.....	749	3,053,128	976	445,708	8,711,635	10,290,006
Chemicals.....	100	22,756,656	4,278	2,198,243	6,805,769	13,034,384
Clothing, men's, factory product.....	481	10,446,107	10,497	4,423,074	12,159,198	23,389,043
Clothing, women's, factory product.....	230	5,197,094	8,311	2,606,024	6,269,816	11,694,580
Coffee and spice, roasting and grinding.....	59	1,280,994	341	153,148	1,981,504	2,769,056
Coke.....	89	20,213,147	9,283	4,516,651	11,678,079	22,282,358
Confectionery.....	694	5,943,237	5,244	1,519,861	5,854,998	10,361,878
Cordage and twine.....	16	4,550,999	1,567	488,888	4,672,682	5,938,381
Cotton goods.....	154	22,386,121	15,567	5,602,339	12,238,660	23,421,470
Dyeing and finishing textiles.....	105	7,679,906	4,716	2,065,752	3,174,507	7,038,012
Fertilizers.....	51	3,802,794	763	351,873	2,584,272	3,644,320
Flouring and grist-mill products.....	2,719	19,516,993	2,195	1,061,869	30,566,466	36,639,423
Foundry and machine-shop products.....	1,260	154,958,750	62,828	33,199,521	62,336,770	127,292,440
Furniture goods, men's.....	48	794,942	2,125	639,066	1,927,214	3,171,757
Furniture, cabinet making and upholstering.....	710	1,402,784	1,262	635,583	942,485	2,704,917
Glass.....	119	28,287,187	19,420	10,287,491	6,435,463	22,011,130
Gold and silver, reducing and refining, not from ore.	6	38,565	7	4,216	90,679	114,109
Hardware.....	49	5,264,174	4,095	1,604,362	1,833,381	4,843,866
Hats and caps (not wool).....	83	660,985	998	353,676	803,741	1,682,442
Hosiery and knit goods.....	319	15,743,981	21,540	5,825,783	10,928,113	21,896,063
Iron and steel.....	291	309,729,222	110,864	61,908,405	283,142,785	434,445,220

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Industries.	Establishments.	Capital.	Employees.	Wages.	Materials.	Products.
Iron and steel nails and spikes.....	13	\$ 2,059,954	856	\$ 312,026	\$ 818,003	\$ 1,497,715
Iron and steel pipe, wrought.....	10	11,698,057	3,675	1,678,961	11,586,470	15,383,692
Iron work, architectural and ornamental.....	93	7,621,620	4,085	2,066,160	6,969,203	10,434,232
Jewelry.....	22	684,952	484	200,793	252,806	693,480
Leather goods.....	27	877,231	1,180	365,658	821,776	1,830,672
Leather, tanned and carried.....	254	57,320,227	13,396	5,457,518	42,403,503	55,615,009
Liquors, distilled.....	73	5,840,034	471	250,348	1,568,569	5,357,615
Liquors, malt.....	208	63,684,480	4,505	2,884,242	6,609,889	29,162,743
Lumber and timber products.....	2,338	47,832,548	13,510	5,550,163	20,777,869	35,749,965
Lumber, planing-mill products.....	542	14,191,248	7,432	3,516,550	9,441,629	16,736,839
Paints.....	66	10,263,515	1,649	736,111	5,203,343	9,137,970
Paper and wood pulp.....	73	16,424,107	4,840	1,989,138	6,374,315	12,267,900
Patent medicines and compounds.....	151	2,905,368	936	360,931	1,456,916	4,363,534
Paving and paving materials.....	188	4,275,018	4,719	2,147,380	2,725,507	6,719,876
Petroleum, refining.....	38	26,580,504	3,299	1,681,603	27,513,735	34,977,706
Roofing and roofing materials.....	455	4,829,223	4,713	2,021,593	2,304,522	6,100,013
Ship building.....	38	14,141,481	7,077	3,545,945	7,163,201	14,493,158
Shirts.....	164	3,050,840	6,888	1,719,307	3,248,666	6,836,928
Silk and silk goods.....	121	20,894,023	21,028	4,629,626	19,884,869	31,072,926
Slaughtering and meat packing, wholesale.....	68	6,009,347	1,383	733,932	15,049,096	17,826,697
Soap and candles.....	60	2,984,308	811	296,169	2,093,138	3,613,249
Stationery goods.....	13	485,430	416	122,786	341,424	631,534
Sugar and molasses refining.....	7	23,992,552	1,249	647,592	33,658,440	36,163,817
Tobacco, cigars and cigarettes.....	2,664	13,836,368	25,045	8,404,687	11,570,888	31,483,141
Umbrellas and canes.....	47	1,898,856	2,832	884,540	3,445,131	5,873,878
Wire.....	9	762,482	274	122,422	378,452	607,415
Woolen goods.....	193	19,405,505	13,721	5,091,932	15,874,544	25,389,344
Worsted goods.....	51	19,396,558	10,201	3,337,491	14,737,134	22,109,392

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*Coal.*—In 1880 the entire coal production of the United States was, anthracite 28,621,371 tons, value \$42,139,740; bituminous 41,860,055 tons, value \$52,427,868; total 70,481,426 tons, value \$94,567,608. Of this amount the mines of P. yielded, anthracite 28,612,595 tons (8,776 tons less than the entire product), value \$42,116,500; bituminous 18,075,548 tons, value \$18,267,151; total 46,688,143 tons, value \$60,383,651. In 1888 the commercial production of the United States aggregated, anthracite 43,971,688 short tons; bituminous 98,066,047; besides 6,621,667 tons of both kinds consumed at the collieries; total 148,659,402 short tons, value at the mines \$211,518,624. The share of P. in this production was, anthracite 43,922,897 short tons (48,791 tons less than the entire product), value at mines \$85,649,649; bituminous 33,796,727, value \$32,106,891; colliery consumption 2,696,667 tons, value \$3,370,834; total 80,416,291 short tons, value \$121,127,374. The total commercial product of P. 1888 was 77,719,624 short tons, value at mines \$117,756,540; shipments of anthracite 43,922,897 short (39,216,873 long) tons, value \$85,649,649; shipments of bituminous 33,796,727 short tons, value \$32,106,891. With a total product of 67,471,667 short (60,242,560 long) tons of anthracite, the year 1900 was a successful one in the history of anthracite mining in P., which has become the greatest coal-mining district in the United States. In 1890 the production of the United States was, anthracite 46,468,641, value \$66,383,772, practically all of which came from P.; bituminous 111,320,016 tons, value \$110,420,801; of the bituminous P. produced 42,302,173 tons. In 1891 P. produced of anthracite 50,665,431, (1892) 52,472,504, (1893) 53,967,543, (1894) 51,921,121, (1895) 57,999,337, the total production outside the State was 67,179 tons. Bituminous coal production since 1890 has been, (1891) U. S. 117,901,237 tons, P. 42,788,490; (1893) U. S. 128,385,231, Pa. 44,070,724; (1895) U. S. 135,118,193, P. 51,813,112. In 1901 the entire coal production of P. was 149,177,612 tons, value \$193,901,606, of the U. S. 293,298,516 tons, value \$349,009,269. This year was the most successful. The entire coal area of P. is 470 sq. m., and the anthracite area not more than 325 sq. m. The coal region is confined to the n.e. part of the state, in the cos. of Carbon, Columbia, Dauphin, Lackawanna, Luzerne, Northumberland, Schuylkill, Sullivan, and Susquehanna; is divided into five well-defined areas—Northern, Eastern Middle, Western Middle, Southern, and Loyalsock; and yields products locally designated by numerals and known as (1) hard white ash, (2) free-burning white ash, (3) Schuylkill red ash, (4) Shamokin, (5) Lorberrry red ash, (6) Lykens Valley red ash, (7) Trevorton, (8) Wyoming red ash, and (9) Lehigh red ash.

*Iron.*—In the census year 1880 P. yielded 51 per cent. of the total pig-iron production of the United States, or 1,930,311 tons (2,000 lbs.) in a total of 3,781,021, and had 269 completed furnace stacks. The state also made 46 per cent. of all the rolled iron produced in the country, and 47 per cent. of all the rails. In the census year 1890 the state retained it's rank among the states as the largest producer

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of pig-iron, the yield being 4,712,511 tons in a total of 9,579,779, and showed a decrease in furnace stacks of 45. Of the total productions, there were 1,220,113 tons (1880) and 1,842,193 tons (1890) of anthracite and mixed anthracite coal and coke pig-iron ; 673,836 tons (1880) and 2,847,362 tons (1890) of coke and bituminous coal pig-iron ; and 34,145 tons (1880) and 17,886 tons (1890) of charcoal pig-iron ; totals, excluding castings made direct from the furnace, 1,928,094 tons (1880) and 4,707,441 tons (1890). The Lehigh, Schuylkill, Upper Susquehanna, and Lower Susquehanna valleys produced 2,068,605 tons with anthracite and mixed anthracite coal and coke fuel ; the Juniata valley 185,395 tons with coke and bituminous coal ; the Shenango valley 624,529 tons with coke and bituminous coal ; Allegheny co. 1,438,840 tons with coke only ; miscellaneous district 377,235 tons with coke only ; and all other furnaces using charcoal 17,907 tons. Included in the total production of the United States (1890), 9,579,779 tons, were 4,233,372 tons of Bessemer pig-iron, of which 2,567,813 tons were made in P. ; the Lehigh valley yielding 257,844, Schuylkill valley 148,026, Upper Susquehanna valley 132,886, Lower Susquehanna valley 493,288, Juniata valley 23,378, Shenango valley 298,792, Allegheny co. 995,721, and the remainder of the state 217,848. In 1901 P. produced 7,343,257 tons (gross) of pig-iron which was nearly one-half the entire product of the U. S. (15,878,354 tons) ; of this 4,885,877 long tons represented Bessemer pig iron, including that made with charcoal, against 2,796,884 tons in 1896. The Lehigh valley pig iron district includes the counties of Lehigh, Northampton, Bucks, and Carbon ; the Schuylkill valley district the cos. of Schuylkill, Berks, Montgomery, Chester, Delaware, and the part of Lebanon adjoining Berks ; the Upper Susquehanna valley district the cos. of Columbia, Northumberland, Lackawanna, Montour, Union, and the part of Perry adjoining the Susquehanna river ; the Lower Susquehanna valley district the cos. of York, Dauphin, Lancaster, Cumberland, and the part of Lebanon not included in the Schuylkill valley ; the Juniata valley district the cos. of Centre, Blair, Mifflin, Bedford, Huntingdon, and the part of Perry drained by the Juniata river ; the Shenango valley district the cos. of Mercer and Lawrence ; and the miscellaneous district the furnaces in Cambria, Cameron, Westmoreland, Fayette, Armstrong, and Clarion counties.

*Steel.*—In the census year 1880 P. produced 57 per cent. of all the steel made in the United States, or 653,561 tons (2,000 lbs.) in a total of 1,145,711, and had 35 steel-works in a total of 73. In this industry, as in the production of pig-iron, P. retained the first rank in the census year 1890, making 61.97 per cent. of the whole amount, or 2,768,253 tons in a total of 4,466,926, and having 79 steel-works (more than the whole number 1880) in a total of 158. Of the total production of Bessemer-steel ingots or direct castings, P. made 556,314 tons (1880) and 2,297,726 tons (1890), 56 and 59 per cent. respectively ; and of the total of Bessemer-steel rails, 409,339 tons (1880) and 1,377,119 tons

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(1890), nearly twice as much 1890 as the total product 1880. The Clapp-Griffiths and Robert-Bessemer processes, introduced into the United States, the first from Great Britain 1884, and the second from France 1888, are included in the above Bessemer-steel ingot or direct casting statement. The production of steel ingots or direct castings by the open-hearth process was 36,944 out of 84,302 tons (1880), and 406,292 out of 504,351 tons (1890); and the production by the crucible process was 60,303 out of 76,201 tons (1880), and 64,235 out of 85,536 tons (1890). The first steel made in the United States by the basic process was produced experimentally in P. 1884, and the manufacture of basic steel was begun near Pittsburgh 1888, Mar. 28. This kind of steel was being made (1890) in 3 works in P., 1 in Ala., and 1 in Tenn., and the total production in the year ending 1890, June 30, was 62,173 tons (2,000 lbs.), of which the largest quantity was made in P. In 1901 the production of steel in P. was Bessemer 4,293,439 tons, open-hearth 3,594,763 tons, crucible 74,800, total 7,963,002 tons. This was nearly two-thirds of the entire steel production of the United States, which was 13,473,595 tons.

*Petroleum.*—The petroleum interests of P. and N. Y. are so closely allied commercially that the official reports on the industry cover both states. The oil-fields of the two states are classed in five divisions—the Allegany, wholly in N. Y.; the Bradford, chiefly in P., but also extending into N. Y.; and the Middle, Lower, and Washington, in P.; and each division is sub-divided into districts bearing local names. The production in the two states 1888 aggregated 16,488,668 barrels. The shipments of crude and of refined petroleum reduced to crude equivalent ( $1\frac{1}{2}$  barrels of crude equal 1 barrel of refined) 1888 were 25,138,031 barrels. A large but unknown quantity also was shipped by private lines; hence the actual amount for direct consumption could not be ascertained. During 1888 there were 1,515 drilling wells completed in P. and N. Y., and 1,226 completed in the Allegany, Bradford, Middle, and Lower divisions alone, of which 969 were productive, and 257 dry holes. In 1890, Oct., the various pipe-line companies in P. and N. Y. received 2,627,248 barrels, delivered 2,725,340, and had 10,263,257 in stock, each barrel containing 42 gallons. The amount produced is decreasing and in 1901 was (Franklin, Pennsylvania and Smiths Ferry districts) 12,625,378 barrels.

*Natural Gas.*—In 1878, while some men were drilling for petroleum at Murrarysville, 18 m. from Pittsburgh, and when a depth of about 1,300 ft. had been reached, there was a sudden and tremendous explosion of gas, which wrecked the drilling apparatus and alarmed the neighborhood for miles. Some one held a lighted match at the hole from which the drills had been blown, and instantly the escaping gas ignited and rose in a hissing flame to a great height, and was then swayed violently by the wind. The burning well attracted wide attention, and after the pillar of fire had hung over the place for five years the ingenuity of man conquered it and devised means for utilizing the flow of gas by conveying it in pipes to the indus-

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trial establishments in Pittsburgh, where it soon began to take the place of manufactured gas for illuminating and of coal for heating purposes. It was estimated 1888 that the natural-gas companies of Pittsburgh were supplying more than 27,000 domestic consumers and 1,200 manufacturing establishments with from 500,000,000 to 650,000,000 cubic ft. of gas per day. In 1901 there were 4,197 producing wells in the state; 1,743 establishments, including iron mills and 326,912 domestic fires were using gas. Where coal is not used in a locality, or where it furnishes only a portion of the fuel, the value of wood or other fuel used is regarded as the value of the coal displaced, and an estimate of the tonnage of coal that would be displaced is made, based on the selling price of coal in that locality. This plan of ascertaining the amount of coal that natural gas displaces is now considered the best basis for calculating the consumption of this gas for domestic and manufacturing purposes. By this rule the displacement of coal, etc., by natural gas in P. was (1885) 3,000,000 short tons, value \$4,500,000; (1886) 6,000,000 tons, value \$9,000,000; (1887) 8,883,000 tons, value \$13,749,500; and (1901) value \$11,892,070. Total displacement in all natural gas fields outside of P. was (1885) 3,131,600 short tons; (1886) 6,453,000 tons; (1901) value \$20,553,086 (see GAS, NATURAL).

*Ship-building.*—In 1880 there were 125 ship building and repairing establishments in P., which employed 3,298 hands, used capital \$5,797,731, paid wages \$2,279,629, materials \$3,610,367, and yielded products valued at \$6,689,470. The products were 802 vessels built and 318 repaired. The new vessels had aggregate tonnage 204,507, and comprised 33 for ocean, coast, and river service, 647 for western river service, and 122 for canal service; and included 24 iron vessels of 17,033 tons, whose materials cost \$1,661,438, and whose value complete was \$3,584,618. In the year ending 1889, June 30, there were 70 new vessels built for the merchant marine service, of an aggregate gross tonnage of 22,445.02, and net tonnage 16,955.94. These comprised 7 sailing-vessels of 1,199.84 net tons; 29 steam-vessels of 12,131.76 net tons; 30 canal-boats of 3,047.14 net tons; 4 barges of 577.34 net tons. In 1896 there were 23 vessels built in P., all steam, with 29,141 total tonnage. Besides these ship-yards, in which only vessels for the merchant marine service were built or repaired, there were two—Cramp's and Roach's—that have provided the U. S. navy with some of the most formidable of its modern vessels. The *Baltimore*, *Philadelphia*, *Yorktown*, *Newark*, *Bennington*, *Concord*, and dynamite cruiser *Vesuvius* were built in the Cramp yards, and the *Chicago*, *Atlanta*, *Boston*, and dispatch-boat *Dolphin* in the Roach yards. The capital invested iron and steel shipbuilding (1900) was \$13,858,081; value products, \$14,085,395. In 1890 a syndicate of Pennsylvania capitalists perfected arrangements to establish an extensive steel manufacturing

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and ship-building plant at Sparrow Point, on Chesapeake Bay, below Baltimore.

*Slate.*—In 1879 P. had 30 out of a total of 94 slate quarries, \$1,681,400 capital invested in the industry, and a production of 271,313 squares, out of a total of 457,267, valued at \$863,877. In 1889 it had 104 out of a total of 206 quarries, \$6,823,002 capital invested, and a product of 474,602 squares of roofing slate, valued at \$1,636,945, out of a total product of 828,990 squares. There were four distinct slating regions in the state—the Bangor, Lehigh, Northampton hard vein, and the Pen Argyl: the largest capital investment was in the Lehigh region, \$2,352,993, while the largest production was in the Bangor region, \$588,258 in value. In 1901 P. produced 853,028 squares.

*Commerce.*—In 1896 P. had 985 vessels of all kinds entered with a total tonnage of 300,213. Of these 373 were sailing vessels, tonnage 130,134; steam vessels 496, tonnage 144,380; canal boats 63, tonnage 6,837; barges 53, tonnage 18,661. The foreign trade from P. ports was (1896) as follows: Philadelphia, imports \$43,840,836, exports total \$39,567,376, domestic \$39,436,050; Pittsburg, imports \$948,910; Erie, imports \$16,475, exports \$13,026. Internal revenue collections amounted to \$11,145,549. During the fiscal year ending 1889, June 30, there entered at the ports of Philadelphia and Erie 416 American vessels, of 218,220 tons, and 887 foreign vessels, of 894,544 tons; total vessels 1,303, tonnage 1,112,764. The clearances were 291 American vessels, of 159,219 tons, and 755 foreign vessels, of 722,345 tons; total vessels 1,046, tonnage 881,564. The imports of merchandise aggregated \$16,877,931, domestic exports \$1,422,505, and foreign exports \$11,562; imports of coin and bullion \$2,236, domestic exports \$5,130. The number of immigrants landed at Philadelphia during the year was 28,100. P. had (1889, June 30) 3 U. S. customs districts—Erie, Philadelphia, and Camden, N. J.; and 4 U. S. internal revenue districts—Philadelphia, Lancaster, Wilkesbarre, and Pittsburgh. The internal revenue receipts for the year were: on distilled spirits \$2,845,735.07; tobacco \$3,418,227.68; fermented liquors \$2,236,268.90; oleomargarine \$12,789.38; penalties \$3,167.71. For later foreign trade see PHILADELPHIA.

*Railroads and Canals.*—In 1826 the state began constructing a canal and railroad to connect Philadelphia and Pittsburgh, and 1831 both were completed, the canal having a length of about 292 m., and the railroad about 126 m. In 1857 the state sold all its rights in each line. In 1882 there were 166 corporations operating railroads wholly or partially within the state, and these had a length within the state of 6,690 m.; in 1889 the total official mileage was 7,692, unofficial 522, total 8,214, (1890) 8,652, (1892) 9,148, (1894) 9,562, (1901) 10,538. In 1895 the total investment was \$1,216,691,594, gross earnings \$149,069,175 (\$25,618,328 from passengers and \$115,053,508 from freight), net earnings \$50,838,220, interest on bonds \$25,090,680, dividends on stocks \$15,547,451. The principal railroads are the Pennsylvania, with numerous



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branches; the Delaware Lackawanna and Western; the Philadelphia and Reading; the Lehigh Valley; the Lehigh and Susquehanna; the Delaware and Hudson; the Philadelphia and Erie; and the Northern Central and Allegheny Valley. There are 12 distinct canals, operated under 9 corporate names (1 having 4 branches), the total length of which is 880 m., of which 781 m. are within the state. The principal canals are the Pennsylvania (with 4 branches), which has total length 360 m., 169 locks, 536 bridges, and 68 aqueducts; the Schuylkill, 108 m.; the Delaware and Hudson, 108 m., of which 25 are in P.; and the Erie and Pittsburgh.

*Religion.*—The Lutheran Church reported 1889: *General Synod*: 7 district synods; 346 ministers; 593 congregations; 85,997 members; 619 Sunday schools; 76,780 teachers and scholars. *General Council*: 3 district synods; 335 ministers; 619 congregations; 123,017 members; 664 Sunday schools; 87,866 teachers and scholars; 29 parochial schools; 1,523 scholars. *Joint Synod of Ohio*: 24 ministers; 31 congregations; 5,034 members; 29 Sunday schools; 1,699 teachers and scholars. *Missouri Synod*: 16 ministers; 24 congregations; 6,405 members; 4 Sunday schools; 198 teachers and scholars; 18 parochial schools; 1,439 scholars. *German Immanuel Synod*: 4 ministers; 4 congregations; 1,500 members, 4 Sunday schools; 200 teachers and scholars. *Total*: 10 district synods; 725 ministers; 1,271 congregations; 211,873 members; 1,320 Sunday schools; 166,743 teachers and scholars; 47 parochial schools; 2,972 scholars. There were also 11 educational institutions, with 77 professors and instructors and 1,000 students; value of college and school property \$740,000; endowments \$584,000; volumes in libraries 69,350; and 9 charitable institutions, with 575 inmates and property \$855,000. The contributions aggregated \$1,886,177, of which \$1,127,269 were for congregational purposes.

The Meth. Episc. Church reported 1889: *Central Penn. Conference*: districts of Altoona, Danville, Harrisburg, Juniata, and Williamsport; 227 travelling and 137 local preachers; 502 churches; 50,626 members; 539 Sunday schools; 7,987 officers and teachers; 59,796 scholars; \$1,976,025 church property; 139 parsonages, value \$322,100. *Philadelphia Conference*: districts of n., n.w., w., and s. Philadelphia; 270 travelling and 318 local preachers; 350 churches; 61,642 members; 389 Sunday schools; 9,186 officers and teachers; 80,606 scholars; \$4,527,350 church property; 139 parsonages, value \$515,175. *Erie Conference*: districts of Clarion, Erie, Franklin, Jamestown, Meadville, and New Castle; 189 travelling and 153 local preachers; 388 churches; 35,669 members; 411 Sunday schools; 5,219 officers and teachers; 36,658 scholars; \$1,335,400 church property; 139 parsonages, value \$185,800. *Pittsburgh Conference*: districts of Allegheny, Blairsville, McKeesport, Pittsburgh, and Washington; 176 travelling and 109 local preachers; 340 churches; 43,385 members; 351 Sunday schools; 5,438 officers and teachers; 43,701 scholars; \$2,343,930 church property;

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67 parsonages, value \$216,270. *Total*: 4 conferences; 20 districts; 862 travelling and 717 local preachers; 1,580 churches; 191,322 members; 1,690 Sunday schools; 27,830 officers and teachers; 220,761 scholars; \$10,182,705 church property; 484 parsonages, value \$1,239,345.

The Presb. Church in the U. S. of Amer. reported 1890: 1 synod; 21 presbyteries (in state work); 878 ministers; 958 churches; 158,584 members; 179,872 Sunday-school members; and \$1,988,632 contributions for congregational purposes.

The Rom Cath. Church reported 1890: *Diocese of Philadelphia* (diocese established 1808, its bp. made abp. 1875): 1 abp.; 296 priests; 149 churches completed, and 6 erecting; 94 chapels and stations; 3 colleges; 13 religious orders of women; 1,240 religious women, novices, and postulants; 21 academies and select schools for young ladies, with 2,100 pupils; 77 parochial schools, with 27,432 pupils; 9 academies and parochial schools under the Christian Brothers, with 2,861 boy pupils; 10 orphan asylums, with 1,488 inmates; industrial school for boys; industrial school for girls; protectory for girls; widows' asylum; 4 hospitals; 2 homes for aged poor; estimated Rom. Cath. pop. 400,000. *Diocese of Erie*: 1 bp.; 72 priests; 105 churches; 46 chapels and stations; 2 monasteries; 14 convents; 4 academies for young ladies; 20 parochial schools for boys, with 2,770 pupils; 30 parochial schools for girls, with 2,917 pupils; orphanage for boys; orphanage for girls; 2 hospitals; estimated Rom. Cath. pop. 60,000. *Diocese of Harrisburg* (established 1868): 1 bp.; 60 priests; 55 churches; 26 chapels and stations; 27 parochial schools, with 4,344 pupils; 2 orphan asylums; estimated Rom. Cath. pop. 36,430. *Diocese of Pittsburgh* (erected 1843, had diocese of Allegheny made part of it 1889): 2 bps.; 213 priests; 135 churches; 44 chapels; 8 monasteries; 55 convents; 6 colleges for boys; academies for young ladies; 79 parochial schools, with 21,000 pupils; industrial school and reformatory; 3 orphanages; 2 hospitals; estimated Rom. Cath. pop. 185,000. *Diocese of Scranton* (established 1868): 1 bp.; 102 priests; 104 churches; 22 convents; 9 academies; 25 parochial schools; 8,570 pupils in Rom. Cath. schools; estimated Rom. Cath. pop. 95,000. *Total*: 5 dioceses; 1 abp.; 4 bps.; 743 priests; 554 churches; 246 chapels and stations; 4 seminaries; 10 colleges; 67 academies; 8 hospitals; 10 monasteries; 27 orphan asylums; 91 convents; 258 parochial schools, with 67,033 pupils; 38 charitable institutions in all; estimated Rom. Cath. pop. 776,430.

The Bapt. Church reported 1890: 24 associations; 490 ministers; 620 churches; 79,415 members; 584 Sunday schools; 8,146 officers and teachers; 72,529 scholars; \$5,391,106 church property; \$880,508 contributions.

The Prot. Episc. Church reported 1890: *Diocese of Penn.* (organized 1784): 1 bp.; 215 clergy; 123 parishes; 34,342 communicants; 3,252 Sunday-school teachers; 40,154 scholars; \$1,047,997 contributions; divinity school; orphan asylum; church home; 4 hospitals; 3 homes for women; home for crippled children; home for consumptives; home

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for the homeless; industrial school and mission; day nursery; house of mercy; 7 workingmen's clubs. *Diocese of Central Penn.* (organized 1871): 1 bp.; 108 clergy; 145 parishes and missions; 9,765 communicants; 1,397 Sunday-school teachers; 13,063 scholars; \$253,651 contributions; Lehigh Univ.; Bishopthorpe School for Girls; Selwyn Hall and Yeates Institute for Boys; church home and orphanage; St. Luke's Hospital. *Diocese of Pittsburgh* (organized 1865): 1 bp.; 68 clergy; 107 parishes and missions; 8,814 communicants; 777 Sunday-school teachers; 7,803 scholars; \$192,517 contributions; Bp. Bowman Institute; Longview School for Girls; Trinity Hall for Boys; church home. *Total:* 3 bps.; 391 clergy; 375 parishes and missions; 52,921 communicants; 5,426 Sunday-school teachers; 61,020 scholars; \$1,494,165 contributions; 35 charitable and educational institutions.

The Ref. Church in the United States (German Ref.) has been represented largely in P. since colonial days, the first congregations having been organized 1709-18. In 1891 there were 23 classes belonging to 4 synods, 797 congregations, 399 ministers, 127,460 members; contributions to benevolent objects \$144,305, for church purposes \$594,950.

The Congl. Churches reported 1890: 74 ministers; 103 churches; 3,565 families; 9,478 members; 11,465 Sunday-school members; \$4,087 contributions of 65 churches for home expenditures.

The Meth. Prot. Church reported 1890: conferences of Penn. and Pittsburgh: 78 itinerant and 59 local ministers and preachers; 92 churches; 8,405 members; 122 Sunday-schools; 1,440 officers and teachers; 7,136 scholars; \$558,825 church property.

The Univ. Church reported 1890: 46 parishes; 1,621 families; 41 church organizations; 2,157 members; 29 Sunday-schools; 2,122 scholars; 35 church edifices; \$375,200 church property.

The Ref. Church in America reported 1890: *Classis of Philadelphia:* 16 ministers; 14 churches; 1,506 families; 2,928 members; 29 Sunday-schools; 3,360 scholars; \$30,213 contributions for congregational purposes.

At the sixth international Sunday-school convention, at Pittsburgh, 1890, June 24-27, there were reported in P. 8,729 Sunday-schools; 123,484 officers and teachers; 964,599 scholars; total members 1,088,083.

*Education.*—In 1895 P. had an estimated school population (5-18 years) of 1,626,000 (819,400 males, 806,600 females). The age for compulsory attendance is from 8 to 13 years, and for free attendance from 6 to 21. The number of pupils enrolled in the public schools (1895) was, 1,106,490 or 68 per cent. of the school population; average daily attendance 779,463, or 70.5 per cent. of the enrollment; average days kept 158.2, aggregate school days given 123,311,047, or an average of 115.5 for each pupil enrolled. Teachers numbered 26,088 (8,628 males, 17,460 females); number of school-houses 14,622, estimated value of school property \$46,617,109; receipts of school moneys, from state taxes \$5,484,316, from local taxes \$11,858,061, other sources \$3,455,357, total \$20,797,734; expenditures

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for sites, buildings and apparatus \$3,724,559, salaries \$9,304,330, other purposes \$5,963,762. The number of common school pupils enrolled (1900) was 1,161,524.

Public high schools (1895) 256, teachers 828, secondary students 21,650 (8,558 males, 13,092 females), below secondary grades 94,096 (males 45,594, females 48,502); graduates during the year 3,427 (males 1,162, females 2,265) of whom 520 were college preparatory; libraries in 200 schools reporting 123,415, total income (171 schools) \$1,080 151. Private secondary schools numbered 140, instructors 696 (344 male, 352 female), secondary students 10,083 (5,457 males, 4,626 females), graduates during the year 1,218 (681 males, 537 females) of whom 555 were college preparatory; libraries of 72 schools reporting 149,784 vols., total income (86 schools) \$1,654,270. Public normal schools in the state numbered 12 with 211 teachers of normal students and 25 of other departments; students in normal departments 4,842 (males 1,721, females 3,121), in business courses 18, other secondary grades 337, elementary grades 2,075, total 7,272 (males 2,843, females 4,429); total income \$498,545, public appropriations \$100,124, school libraries 27,457 vols. Private normal schools numbered 9, with 94 instructors of normal students, 134 other teachers, total 226; students in normal departments 2,048 (1,183 males, 865 females), in business courses 409, other secondary grades 219, elementary grades 747, total 3,423 (males 2,001, females 1,422), total income \$192,939, libraries 18,554 vols. P. has 32 universities and colleges as follows: Western University of Pennsylvania (non-sect.), Allegheny; Muhlenberg C. (Luth.), Allentown; Lebanon Valley C. (U. B.), Annville; St. Vincent C. (R. C.), Beatty; Geneva C. (Ref. Presb.), Beaver Falls; Moravian C. (U. B.), Bethlehem; Dickinson C. (M. E.), Carlisle; Pennsylvania Military C. (non-sect.), Chester; Ursinus C. (Ref.), Collegeville; Lafayette C. (Presb.), Easton; Pennsylvania C. (Luth.), Gettysburg; Thiel C. (Luth.), Greenville; Grove City C. (non-sect.), Grove City; Haverford C. (Friends), Haverford; Monongahela C. (Bapt.), Jefferson; Franklin and Marshall C. (Ref.), Lancaster; Bucknell U. (Bapt.), Lewisburg; Lincoln U. (Presb.), Lincoln University; St. Francis C. (R. C.), Loretto; Allegheny C. (M. E.), Meadville; Central Pennsylvania C. (Un. Evan.), New Berlin; Westminster C. (Un. Pres.), New Wilmington; Central High School (non-sect.), La Salle C. (R. C.), Univ. of Pennsylvania (non-sect.), Philadelphia; Duquesne C. (non-sect.), Holy Ghost (R. C.), Pittsburg; Penn. State C. (non-sect.), State College; Swarthmore C. (Friends), Swarthmore; Villanova C. (R. C.), Villanova; Volant C. (non-sect.), Volant; Washington and Jefferson (Presb.), Washington. The state had also a school of technology at Bethlehem, three normal training schools, 17 theological schools, two law schools, eight medical schools, three dental schools, two schools of pharmacy, one veterinary school, 19 training schools for nurses, 45 commercial and business colleges, and 11 schools for delinquents and defectives.

*Illiteracy.*—The total population (1890) 10 years of age and over was 4,063,134, illiterate 275,353. or 6.8 per cent.;

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males, total 2,061,052, illiterate 134,704, or 6.5 per cent. ; females 2,002,082, illiterate 140,649, or 7.0 per cent. White population 10 years of age and over 3,974,009, illiterate 254,663, or 6.4 per cent. ; native white, total 3,165,888, illiterate 110,737, or 3.5 per cent. ; foreign whites, total 808,121, illiterate 143,926, or 17.8 per cent. Colored population 10 years of age and over 89,125, illiterate 20,690, or 23.2 per cent.

*Finances and Banking.*—In 1890 P. had a total net debt of \$71,841,675 ; of this \$4,068,610 was state debt, \$7,841,484 county, \$54,238,547 municipal, and \$4,893,034 school district ; total assessed valuation of property \$2,659,796,909, of which \$2,043,016,599 was real (rated at 43 per cent. of the actual value) and \$617,780,310 personal ; true value of all property \$6,190,746,550, of which \$3,781,177,285 was real-estate ; total taxation \$37,337,062, of which \$1,725,284 was for state, \$263,321 for county, \$19,183,154 municipal, and \$11,167,303 for schools ; annual interest charge on 23.2 per cent. Illiterates of voting age (1900) 139,982. debt \$5,778,853 or 5.35 per cent. on the debt. On 1901, Dec. 1, the net debt of the state was \$6,815,299 ; appropriations for 1901 and 1902 \$13,975,877 ; receipts at treasury 1900, Nov. 1—1901, Nov. 1, \$17,727,432 ; expenditures \$16,669,399 ; balance, including the general and sinking funds, \$7,708,022 ; total taxes collected \$58,740,731, including \$3,608,415 from personal property ; total value of all real estate \$3,218,593,792. There were (1901) 107 state banks, 155 trust companies, 16 savings institutions ; number of deposit accounts 836,319 ; number of national banks, (1902, June 30), 538 ; capital, \$80,779,536 ; surplus \$55,560,323.

*History.*—Hendrik Hudson entered the bay of New York 1609, Sep. 9, and the same year discovered, but did not attempt to explore, Delaware Bay. The following year the Dutch E. India Co. sent a vessel from Amsterdam to seek trade with the American natives. Some members of this first trading expedition penetrated the country to Delaware Bay and explored the lower part of Delaware river. Under the authority of the States-General, Cornelis Hendricksen headed an expedition which ascended the Delaware river 1616 for the purpose of enlarging trade relations. The whole unoccupied territory between Canada and Va. was recognized as the possession of the United New Netherland Co. during the existence of its grant 1614–21 ; and afterward was claimed by the Dutch W. India Co., which succeeded the former company. The Dutch built Fort Nassau on the Delaware river 1623, but the first actual settlement in P. was by Swedish colonists at Tinicum Island. After Petrus Stuyvesant had settled the Indian war in New Amsterdam, which had broken out during the administration of Gov. Kieft, his predecessor, he turned his attention to the English colonists on the Connecticut river and the Swedes on the Delaware. The latter being the weaker were the first objects of his ambition, and 1655 he marched on their settlements and took possession of their territory. Five years afterward the

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Dutch established a colony from New Amsterdam at the Minisinks. In 1664 Charles II. granted all the territory between the Connecticut and Delaware rivers to his brother, the Duke of York, and, excepting the few months 1673-4, when the Dutch held the territory through recapture, the settlements on the Delaware remained under the govt. of N. Y. till 1681, Mar. 4. That day Charles II. granted to William Penn (q.v.) the territory described as 'a tract of land in America lying n. of Maryland, on the e. bounded with Delaware river. on the w. limited as Maryland, and northward to extend as far as plantable,' and named the tract Pennsylvania. Penn landed at New Castle 1682, Oct. 27 (o.s.); visited Philadelphia the following month; organized his govt. 1683; and returned to England to establish more clearly the boundary between his possessions and Md. 1684. He returned for a few months 1699, and prepared a new constitution for the colony and gave Philadelphia a charter. On his death (1718) his heirs succeeded him as proprietaries. Under Penn's wise and liberal administration, the colony was built up rapidly by immigration, and friendship was maintained with the Indians till the war between France and Great Britain 1744, when the French secured the powerful tribes as allies. 1755, July 9, the British and provincial troops under Gen. Edward Braddock (q.v.) were defeated by the French and Indians at Fort Du Quesne, now Pittsburgh, and during that and the following years the colony suffered severely from ravages by Indians. A treaty 1758 was observed by the Indians till 1763, when the Pontiac war kept the colony in terror for a year.

The long-disputed boundary between P. and Md. was settled 1763-67 by the Mason and Dixon's Line (q.v.); the 'new purchase,' a large tract in the n. and n.w. of the present state, was acquired by the proprietaries by treaty with the Six Nations 1768; the merchants of P. signed the non-importing agreement and destroyed much taxed tea 1774; and the first continental congress was held in Philadelphia 1774, Sep. 5—Oct. 26. A provincial convention was held in Philadelphia 1775, Jan. 23; a committee of safety was appointed after the battle of Lexington; the second congress assembled in Philadelphia May 10, and adopted the Declaration of Independence (q.v.) 1776, July 4; the proprietary govt. was abolished, and a state constitutional convention held, 1776, July 15; congress reconvened in Philadelphia 1777, Mar. 4, and 1778, July 2; the battle of Brandywine was fought 1777, Sep. 11; the massacre of Paoli occurred Sep. 20; the British occupied Philadelphia Sep. 26, defeated the Americans at Germantown Oct. 4, and held Philadelphia till 1778, June 18; and the royal charter was annulled. Excepting during the British occupation, Philadelphia was the capital of the colony and state till 1799, and was the seat of the federal govt. 1790-1800. Lancaster became the capital 1799, and Harrisburg 1812. A 'whisky insurrection' against excise laws caused much disturbance in w. P. 1794; the first and second U. S. banks were established in Philadelphia; the war of 1812

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was very disastrous to the commerce of P.; the state constitution was revised 1838, amended 1850, 57, and 64, and superseded by the present one 1874; and petroleum was discovered 1859. During the civil war P. furnished the Union armies 337,930 men, and was invaded three times by the Confederates. Chambersburg was captured and a large amount of milit. stores was burned 1862, Oct.; the battle of Gettysburg was fought 1863, July 1, 2, 3; and Chambersburg was again captured and almost wholly destroyed (with a loss of more than \$2,000,000) 1864, July. The financial panic 1873, the centennial exhibition and successful prosecution of the 'Molly Maguire' murderers 1876, the railroad riots 1877, and the anthracite coal strike, 1902, were events of more than local importance.

*Government.*—The executive authority is vested by the constitution (1874) in a gov., elected for 4 years and ineligible for re-election for the next succeeding term, salary \$10,000 per annum; a lieut.gov., elected for 4 years, salary \$3,000 per annum; sec. of internal affairs, elected for 4 years, salary \$3,000 per annum; sec. of the commonwealth (\$4,000), atty.gen. (\$3,500), and supt. of public instruction (\$2,500), appointed by the gov. for 3 years each; auditor-gen., elected for 3 years, salary \$3,000; and state treas., elected for 2 years, salary \$5,000. The gov. must be at least 30 years old, and must have been a citizen and an inhabitant of the state 7 years next preceding his election, unless absent on business of the United States or of the state. No member of congress nor any person holding any office under the United States or of the state can exercise the office of gov. He has a veto power over every bill passed by the legislature; but if, notwithstanding his objection, two-thirds of both houses agree to the bill after reconsideration, it becomes a law. In case of his death, removal, or other disability, the office devolves on the lieut.gov., who otherwise is pres. of the senate; and in case of the death, removal, disability, or accession of the lieut.gov. to the office of gov., the office of lieut.gov. devolves on the pres. *pro tem.* of the senate. Should there be a vacancy in the office of lieut.gov. when a vacancy in the office of gov. occurs, the pres. *pro tem.* of the senate becomes gov. Contested elections for gov. or lieut.gov. are decided by a committee from both houses of the assembly, with the chief-justice presiding. The legislative authority is vested in a general assembly, comprising a senate of 50 members, elected for 4 years, and a house of representatives of 204 members, elected for 2 years, salary of each \$1,000 for 100 days, \$10 per day for excess of 100 days not exceeding 50 days, and 5 cts. mileage; sessions biennial; limit 150 days. State senators must be at least 25 years old, and representatives 21; each must have been a citizen and an inhabitant of the state for 4 years, an inhabitant of his district for 1 year, next preceding his election, unless absent on business of the United States or of the state, and must reside in his district during the tenure of his office. The constitution restricts the general power to legislate, prohibiting special legislation in many instances, and

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limiting the power of appropriating public money to charitable objects. All laws relating to taxation and courts of justice are general and uniform in their operation through the state; and restrictions are laid upon the right of the state or of any municipality therein to contract debts. The judicial authority is vested in a supreme court of 7 judges, elected for 21 years, or during good behavior within that period, and ineligible for re-election—salary, chief-justice \$8,500 per annum, 6 associate justices \$8,000 each per annum; courts of oyer and terminer and general jail delivery; courts of common pleas; orphans' courts; courts of quarter sessions of the peace; magistrate courts; special orphans' courts in cos. of more than 150,000 pop.; special courts of common pleas of co-ordinate powers; other special courts provided by the constitution; and the usual co. courts and officers. All judges, excepting those of the supreme court, are elected for 10 years or during good behavior within that period; and co. officers are elected for 5 years. The supreme court holds one session each year in Philadelphia, Harrisburg, and Pittsburgh, for the adjudication of writs of error, appeals, etc., and certiorari. The style of all process is required to be 'The Commonwealth of Pennsylvania.' The state is divided into two districts for holding U. S. district courts; courts in the e. district are held in Philadelphia, and in the w. district in Pittsburgh, Williamsport, and Erie; salary of U. S. district judges \$4,000 each per annum. Other officials in the state are 2 U. S. pension agents, salary of each \$4,000 per annum; 10 U. S. collectors of internal revenue, salary \$2,375—\$4,500 each; U. S. collector of customs in Philadelphia, salary \$8,000; and supt. of the U. S. mint in Philadelphia, salary \$4,500. There were (1889, Dec. 21) 4,428 post-offices in P., of which 7 were first-class, 41 second, 146 third, 194 presidential, 4,234 fourth, 482 money-order offices, 14 money-stations, and 19 postal-note offices.

The successive govts., with their terms of service, are as follows: *Colonial, Swedish*: Peter Minit 1638; Peter Hollandaer 1641; John Printz 1643; John Pappogoya 1653; Johan C. Rysingh 1654; *Dutch*: John P. Jacquet 1655; *City and Company*, 1657-62: Jacob Alricks (city) 1657; Alexander d'Hinoyossa (city) 1659; Goeran Van Dyke (company) 1657; William Beekman 1658; *United Colony*: William Beekman 1662; Alexander d'Hinoyossa 1663; *English*: Richard Nicolls 1664; Robert Carr (deputy) 1664; Francis Lovelace 1667; *Dutch*: Anthony Colve 1673; Peter Alricks (deputy) 1673; *English*: Sir Edmund Andros 1674; *Proprietary*: William Markham (deputy) 1681; William Penn 1682; Council, Thomas Lloyd, pres., 1684; Commissioners 1688; John Blackwell (deputy) 1688; Council, Thomas Lloyd, pres., 1690; Thomas Lloyd (deputy) 1691; William Markham (deputy) 1691; *Crown*: Benjamin Fletcher, also gov. of N. Y., 1693; William Markham (lieut.gov.) 1693; *Proprietary*: William Markham 1695; William Penn 1699; Andrew Hamilton 1701; Council, E. Shippen, pres., 1703; John Evans 1704; Charles Gookin (lieut.gov.) 1709; Sir William Keith (lieut.gov.) 1717; Patrick Gordon (lieut.



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gov.) 1726; Council, J. Logan, pres., 1736; George Thomas (lieut.gov.) 1738; Council, A. Palmer, pres., 1747; James Hamilton (lieut.gov.) 1748; Robert H. Morris (lieut.gov.) 1754; William Denny (lieut.gov.) 1756; James Hamilton (lieut.gov.) 1759; John Penn 1763; Council, J. Hamilton, pres., 1771; Richard Penn 1771; John Penn (lieut.gov.) 1776; *Revolution*: Committee of Safety, Benjamin Franklin, chairman, 1776, Sep.—1777, Mar.; *Supreme Executive Council*, presidents: Thomas Wharton, Jr., 1777, Mar. 5; George Bryan (act'g) 1778, May 23; Joseph Reed 1778, Dec. 22; William Moore 1781, Nov. 15; John Dickinson 1782, Nov. 7; Benjamin Franklin 1785, Oct. 18; Thomas Mifflin 1788, Nov. 5; *State*: Thomas Mifflin 1790; Thomas McKean 1799; Simon Snyder 1808; William Findlay 1817; Joseph Heister 1820; John A. Schulze 1823; George Wolf 1829; Joseph Ritner 1835; David R. Porter 1839; Francis R. Shunk 1845; William F. Johnston 1848; William Bigler 1852; James Pollock 1855; Andrew G. Curtin 1861; John W. Geary 1867; John F. Hartranft 1873; John F. Hartranft 1876; Henry M. Hoyt 1879; Robert E. Pattison 1883-87; James A. Beaver 1887-91; Robert E. Pattison 1891-95; Daniel H. Hastings 1895-99; William A. Stone 1899-1903; Samuel W. Pennypacker 1903-07.

*Counties, Cities, and Towns.*—P. is divided into 67 counties. In 1880 the most populous counties were: Philadelphia, 847,170; Allegheny, 355,869; Lancaster, 139,447; Luzerne, 133,065; Schuylkill, 129,974; Berks, 122,597; Montgomery, 96,494; Lackawanna, 89,269; York, 87,841; Chester, 83,481; Westmoreland, 78,036; Dauphin, 76,148; and Erie, 74,688. The leading cities and towns were: Philadelphia, 847,170; Pittsburgh, 156,389; Allegheny, 78,682; Scranton, 45,850; Reading, 43,278; Harrisburg, 30,762; Erie, 27,737; Lancaster, 25,769; Wilkesbarre, 23,339; Altoona, 19,710; Williamsport, 18,934; Allentown, 18,068; Chester, 14,997; York, 13,940; Pottsville, 13,253; Norristown, 13,063; Easton, 11,924; Shenandoah, 10,147; Bradford, 9,197; Titusville, 9,046; Meadville, 8,860; Lebanon, 8,778; New Castle, 8,418; Johnstown, 8,380; Danville, 8,346; Columbia, 8,312; McKeesport, 8,212; Shamokin, 8,184; Carbondale, 7,714; Pittston, 7,472; Oil City, 7,315; Mahanoy, 7,181; and West Chester, 7,046. In 1890 the principal cities and towns were: Philadelphia 1,046,964; Pittsburgh 238,617; Allegheny 105,287; Scranton 75,215; Reading 58,661; Erie 40,634; Harrisburg 39,385; Wilkesbarre 37,718; Lancaster 32,011; Altoona 30,337; Williamsport 27,132; Allentown 25,228; Johnstown 21,805; York 20,793; McKeesport 20,741; Chester 20,226; Norristown 19,791; Shenandoah 15,944; Lebanon 14,664; Easton 14,481; Shamokin 14,403; Pottsville 14,117; Pottstown 13,285; Hazleton 11,872; New Castle 11,600; Mahanoy City 11,286; Oil City 10,932; Carbondale 10,833; Columbia 10,599; Bradford 10,514; S. Bethlehem 10,302; Pittston 10,302; Nanticoke 10,044; Beaver Falls 9,735; Meadville 9,520; Plymouth 9,344; Steelton 9,250; Butler 8,734; Braddock 8,561; Phoenixville 8,514; Dunmore 8,315; Mount Carmel 8,254; Titusville 8,073.

*Politics*—State (annual), congressional, presidential

## PENNSYLVANIA.

elections are held on Tuesday after the first Monday in Nov. The qualifications of electors are: Every male citizen, 21 years of age, who shall have been a citizen of the United States at least one month, and who shall have resided in the state one year, and in the election district where he offers to vote two months, immediately preceding the election, and who shall have within two years paid a state or co. tax assessed at least two months, and paid at least one month, before the election, is entitled to the rights of an elector. Citizens of the United States between the ages of 21 and 22 years and otherwise qualified are entitled to vote without the payment of taxes. The state govt. (1903) was rep. in execu. officers (the super. of public instruction excepted) and legislature, with a party majority in the latter of 30 in the senate, 114 in house, 102 on joint ballot. P. has (1903) 34 electoral votes. Her votes for pres. and vice-pres. have been as follows: 1788, George Washington 10, John Adams 8, John Hancock 2; 1792, George Washington 15, John Adams 14, George Clinton 1; 1796, John Adams 1, Thomas Jefferson 14, Thomas Pinckney 2, Aaron Burr 13; 1800, Thomas Jefferson 8, Aaron Burr 8, John Adams 7, C. C. Pinckney 7; 1804, Thomas Jefferson and George Clinton 20; 1808, James Madison and George Clinton; 1812, James Madison and Elbridge Gerry 25; 1816, James Monroe and Daniel D. Tompkins; 1820, James Monroe and Daniel D. Tompkins 24; 1824, Andrew Jackson and John C. Calhoun 28; 1828, Andrew Jackson and John C. Calhoun; 1832, Andrew Jackson and William Wilkins 30; 1836, Martin Van Buren and Richard M. Johnson; 1840, William H. Harrison and John Tyler; 1844, James K. Polk and George M. Dallas 26; 1848, Zachary Taylor and Millard Fillmore; 1852, Franklin Pierce and William R. King 27; 1856, James Buchanan and John C. Breckinridge; 1860, Abraham Lincoln and Hannibal Hamlin; 1864, Abraham Lincoln and Andrew Johnson 26; 1868, U. S. Grant and Schuyler Colfax; 1872, U. S. Grant and Henry Wilson 29; 1876, Rutherford B. Hayes and William A. Wheeler; 1880, James A. Garfield and Chester A. Arthur; 1884, James G. Blaine and John A. Logan 30; 1888, Benjamin Harrison and Levi P. Morton 30; 1892, Benjamin Harrison and Whitelaw Reid 32; 1896, William McKinley and Garret A. Hobart 32.

*Population.*—(1790) white 424,099, free colored 6,537, slaves 3,737, total 434,373; (1800) white 586,095, free colored 14,564, slaves 1,706, total 602,365; (1810) white 786,804, free colored 22,492, slaves 795, total 810,091; (1820) white 1,017,094, free colored 30,202, slaves 211, total 1,047,507; (1830) white 1,309,900, free colored 37,930, slaves 413, total 1,348,233; (1840) white 1,676,115, free colored 47,854, slaves 64, total 1,724,033; (1850) white 2,258,160, free colored 53,626, total 2,311,786; (1860) white 2,849,259, free colored 56,949, total 2,906,215; (1870) white 3,456,609, colored 65,294, total 3,521,951; (1880) white 4,197,016, colored 85,875; (1890) 5,258,014; (1900) 6,302,115.

## PENNSYLVANIA.

**PENNSYLVANIA COLLEGE:** at Gettysburg, Penn., founded 1832. It is conducted in the interests of the General Synod portion of the Lutheran Church. The institution was begun with no endowment. In its earlier history it received some aid from the State in common with the other colleges in Penn. Gradual additions have been made to the endowments till they now amount to \$213,000. The income from this fund, and tuition fees (\$50.00 per annum per student) are the principal resources. On the campus of about 35 acres are a large and handsome Recitation Hall with lecture, library, and museum rooms; a Dormitory for 150 students; Brua chapel; a well equipped gymnasium; a chemical laboratory with all appliances for general and advanced work; an astronomical observatory; the Preparatory Hall; three Greek-Letter society lodges; and official residences: these buildings are heated from a central steam plant, and supplied with water from water-works on the grounds. The libraries number over 24,000 vols.; the mineralogical, metallurgical, and botanical collections are excellent. The plant of the college is worth about \$300,000.

The faculty numbers 15 professors and instructors; 2 courses of study, the classical and Latin Scientific, are offered. In 1891 electric studies were introduced into junior and senior years. The work in the preparatory department is directed mainly to preparation for college classes.

During the battle 1863, July 1-3, the college buildings were used as hospitals, and within their walls met Union and Rebel soldiers who had been former students of the college.

The number of students (1901) was 181 in the college classes, and 68 in the preparatory dept. Women are taken as day-pupils.

The presidents of the college have been: Charles Philip Krautts, D.D., 1834-50; Henry L. Bangher, 1850-68; Milton Valentine, D.D., LL.D., 1868-84; Harvey W. McKnight, D.D., LL.D., since 1884.

**PENNSYLVANIA STATE COLLEGE:** institution at State College, Penn. (non-sect.), organized 1857; for both sexes. The college has 9 courses of instruction—general science, Latin, scientific, agriculture, biology, chemistry, civil engineering, mechanical engineering, physics, electrical engineering. The library had (1902) 18,500 vols. There are geological, botanical, and zoological museums; cabinets of minerals; botanical, chemical, physical, and electrical laboratories; agricultural experiment station; farm of 500 acres; mechanical workshops; instruction in military tactics by an officer of the U. S. army. Tuition is free; and cost of board need not exceed \$2.50 a week. The endowment is derived from the sale of public lands given by the general govt. to the state, on which the state pays \$30,000 a year; also \$15,000 a year under the provision of act of congress 1890, Aug. 30; endowment \$500,000. Faculty 48; students 550 (including those in preparatory dept.). George W. Atherton, LL.D., president.

## PENNSYLVANIA.

PENNSYLVANIA, UNIVERSITY OF: univ. proper in West Philadelphia; a state institution. Its origin is traced to a pamphlet by Benjamin Franklin, 1749—*Proposals relating to the Education of Youth in Pennsylvania*. On the plan that he proposed, an assoc. was formed to found a school; £2,000 (equal to \$40,000 now) was raised, and a building was bought which had been erected for the large congregations of Whitefield. An acad., with Eng., math., and Latin depts., was opened 1751. It was enlarged to a coll. 1755, entitled 'The Coll., Acad., and Charitable School of Philadelphia,' and empowered to confer degrees. The first commencement occurred 1757, when 7 received the degree A.B. The provost, the Rev. William Smith, for his opposition to the non-resistance policy of the legislature during the French war, was thrown into prison, but heard his classes there. Released, he visited England, received the degree LL.D. from Oxford, and, on a second visit to raise money, 'divided the land' with an agent of Columbia Coll., both meeting with success. The Archbishop of Canterbury and others wrote from England recommending a continuance of the broad undenominational plan, but the legislature, 1779, took advantage of the wording of the reply to wrest the coll. from its corporators and found a univ; the wrong was righted 10 yrs. later; the old coll. and the univ. amalgamated. The old location is now the site of the new post-office. The univ. is in the s.w. quarter of the city, opposite the South st. bridge over the Schuylkill river, near the Powelton ave. station of the Pennsylvania r.r., the grounds lying chiefly on Woodland ave. There are 15 buildings, of which 9 belong to the med. depts.; the others include the coll. hall, biol. hall, library, and dining hall. The new buildings are fine; that of the dept. of arts and sciences, built of serpentine, has a front of 260 ft. The univ. has, in its coll. dept., courses in art, science (Towne Scientific School), nat. hist. (School of Biol.), finance and economy (Wharton School), and music; and depts. of med., law, dentistry, philos., veterinary medicine, physical education, archeology, and paleontology. There is an 'auxiliary med. dept.,' supplementing the winter med. course by lectures in branches essential to thorough med. education. There are also special and partial courses in languages, psychol., hist., economics, business, phys. sciences, metallurgy, engineering, architecture, etc. The school of law is in the Girard Life Insurance Building. The univ. hospital is on 34th and 36th sts. A museum of archeology and paleontology was organized recently; and for two years an expedition under Prof. John P. Peters engaged in work in Babylonia, while a collection of Amer. antiquities formed by Chas. C. Abbott; of the paleontological collection, Prof. E. D. Cope was first curator. Memoirs are published by the economic and other depts.; e.g., on animal location, on gymnastics, etc. The library has (1902) 205,000 bound volumes and a large number of unbound volumes and pamphlets; it embraces the Stephen Colwell collection of 7,000 volumes on finance and pol. econ., and that of

## PENNSYLVANIA DUTCH.

Henry C. Carey on similar subjects, including 3,000 pamphlets; the library of Prof. F. V. Hayden on nat. hist.; the Prof. F. A. Pott (Univ. of Halle) collection of 4,000 vols. on philol., and numerous other special collections. The library fund is \$60,000. The total productive fund of the univ. amounts to nearly \$5,000,000, and the annual revenue 465,000. The valuation placed on the entire plant (1902) was \$6,068,097. The provost (1902) was Chas. C. Harrison, A.M., *pro tempore* pres. of the board of trustees, while the gov. of Penn. is *ex-officio* pres. The coll. dept. has 107 profs., lecturers, and instructors; the med. depts. 101; the law 20; philos. 39; emeritus profs. 6; but deducting those repeated in counting there are 265. According to the catalogues of 1894-95, there were 15 post-seniors in all depts.; in the coll. courses 115 seniors, 102 juniors, 154 sophomores, 161 freshmen; 39 specials in biol., 39 in architecture. There were in addition 30 partial students. The total number of students in all depts. including 1,006 in the college was (1901) 2,278. In 1839 the univ. sent out an archeological expedition to Babylonia under Prof. Hilprecht. For several years the great mound of Niffer, in central Babylonia, was systematically explored, and in 1896 the site of the ancient city Nippur was discovered. Excavations brought to light cuneiform inscriptions which carry the history of the Babylonian people to a period about 2,250 years earlier than had heretofore been verified, or to about 7,000 B.C. Investigation disclosed the fact that one city had been piled upon another in a succession of stratifications of which the lowest has not yet been discovered.

**PENNSYLVANIA DUTCH:** fusion of German dialects from the region of the upper Rhine, including Switzerland, with an admixture of English: it is spoken by descendants of the early German settlers in Penn. P. D. is a dialect of German, and does not differ in any essential particulars from German as spoken by the peasantry in the home countries. It has borrowed many words from the English, but its syntax is the syntax of the German language: the following lines from a poem by Dr. H. Harbaugh will serve to exemplify the peculiarities of P. D.:

Wie gleich ich selle babble-beem,  
 Sie schtehen wie brieder dar;  
 Un uf'm gippel—g'wiss ich leb-  
 Hockt alleweil 'n schtaar.  
 'S gippel biegt sich—guk wie's gaunscht—  
 'R hebt sich awer fescht;  
 Ich seh sei rothe figle plehn,  
 Wann er di feddere wescht:  
 Will wette, das de fraale hot  
 Uf sellem baum 'n nescht!

The author of the 'Babble-beem' (Poplar Trees) published a vol. of verses 1870 in P. D. Prof. Haldemann, of the Univ. of Pennsylvania, wrote, 1872, an essay in P. D.: both works are issued by the publication board of the Reformed Church.

## PENNULE—PENNY.

**PENNULE**, n. *pěn'nūl* [L. *pennula*—dim. from *penna*, a feather]: a small feather, or division of a feather.

**PENNY**, n. *pěn'nĭ* [Dut. *penninck*; Ger. *pfennig*, a small coin: Bohem. *penizek*, a little piece of money: Manx, *peng*, a penny]: originally probably a coin in general: an English copper coin, 12 of which are equal to a shilling (see below): a small sum; money in general: plu. **PEN'NIES**, *-nĭz*, when number is meant: plu. **PENCE**, *pěns*, when amount or value is indicated. **PEN'NILESS**. a. *-nĭ-lěs*, destitute of money; poor. **PEN'NILESSNESS**, n. *-něs*, state of being without money. **PENNYWISE**, saving small sums at the hazard of larger. **PENNY-A-LINER**, a humble contributor to a newspaper, who is paid at the rate of 1*d.* or 1½*d.* a line; a contemptuous name for an ill-paid author. **PENNY-WEDDING**, or **PENNY-BRIDAL**, in Scotland, wedding at which the invited guests made contributions in money (seldom more than 1*s.* each), to pay the general expenses, and leave over a small sum, to assist the newly-married pair in furnishing their dwelling. This practice, now disused, was prevalent in the 17th c.; and was denounced by presbyteries and kirk-sessions, and 1645 by the gen. assembly, as leading to 'profane minstrelsing and promiscuous dancing.' **PENNYWEIGHT**, a weight of 24 grains troy. **PENNY-WORTH**, good value; a bargain; a small quantity.

**PENNY**: a British coin and money of account, of the value of about two cents in federal money. After the Sceattæ (q.v.) it is the most ancient of English coins, and was the only one generally current among the Anglo-Saxons. The name is evidently the same as the German *pfennig*; and both words seem intimately connected with the old German *pfant*, a pledge, and the Latin *pendo*, to weigh or to pay. Both in Britain and on the continent the word was used anciently for money in general; hence such phrases as 'he has got his *penny-worth*,' i.e., he has got value for his money; etc. The P. is mentioned first in the laws of Ina, King of the West Saxons, about the close of the 7th c. It was at this time a silver coin, and weighed about 22½ troy grains, being thus about  $\frac{1}{240}$  of the Saxon pound-weight. This relation to the pound-weight is evidently derived from the usage of the early Franks, who retained the Roman division of the *libra* into 20 *solidi*, and the *solidus* into 12 *denarii* (the denarius being thus the 240th part of the *libra* or pound. See **MARK**. Halfpence and farthings were not coined in England till the time of Edward I., but the practice previously prevailed of so deeply indenting the P. with a cross mark, that the coin could be easily broken into two or four parts as required. Silver farthings ceased to be coined under Edward VI., and silver halfpennies under the Commonwealth. By this time the P. had steadily decreased in weight; it was 18 grains under Edward III., 15 and 12 under Edward IV., 8 under Edward VI., and under Elizabeth it was finally fixed at 7½ grains, or  $\frac{1}{62}$  of an ounce of silver, a value to which the subsequent copper pennies, which till 1860 were the circulating medium, closely approximated. In 1672 an authorized copper coinage was established, and halfpence

## PENN YAN—PENNYROYAL.

and farthings were struck in copper. The copper P. was not introduced till 1797, when also the coinage of two-penny pieces was begun; but these latter, being found unsuitable, were withdrawn. The P. of the present bronze coinage is of only about half the value of the old copper P. The German *pfennig* also was originally a silver coin, bearing the same relation to the German pound of silver as the English P. to its pound. The old Scottish P. was only  $\frac{1}{12}$  of the English one, as the pound Scots and the Scots shilling were also  $\frac{1}{12}$  of the English coins of the same name. In the 12th c. the P. was made very broad and thin. In the beginning of the 14th c. the mark of silver was anew divided into 60 parts or coins, which, to distinguish them from the old coins, were called *grossi denarii*, whence the term *groschen*. In the currency of the German Empire, the pfennig is a nickel coin, the hundredth of the mark, the latter being equal to a shilling.

PENN YAN, *pěn yǎn'*: village, cap. of Yates co., N. Y.; on the Northern Central and the Fall Brook Coal Companies' railroads, and at the outlet of Keuka Lake, 43 m. n. by w. of Elmira. There is an acad; a semi-monthly and three weekly newspapers; and one state and two national banks. each with \$50,000 capital. The place is said to have been named from the two elements prominently combined in its settlement—Pennsylvanians and Yankees. Steamers run to Hammondsport at the other end of the lake. There is abundant water-power, utilized in flour-mills, lumber-mills, and factories of various kinds. There is considerable local trade. The surrounding agricultural region is noted for productiveness. Fruit of various kinds is extensively grown, and grapes are produced in great quantities. Pop. (1870) 3,488; (1880) 3,475; (1890) 4,254; (1900) 4,650.

PENNYPACKER, *pěn'ǎ-pǎk-ér*, GALUSHA: born Valley Forge, Penn., 1844, June 1. He studied at an acad., entered the Union army as a private when 17 years of age, served in Florida and in the attack on Charleston, received three wounds at Drury's Bluff, Va., participated in the siege of Petersburg, and was badly wounded at Fort Fisher. His promotions through various grades were rapid. He received the brevets of brig.gen. and maj.gen. of vols. for brilliant service, and 1867 received the same brevets in the U. S. army. He was appointed col. of infantry 1866, and, on account of suffering from wounds received in battle, retired 1883.

PENNYROYAL, n. *pěn'nǎ-roy'ǎl* [*penny* is corrupted from OE. *puliol*, arising from the L. *puleium regium*, penny-royal—from L. *pulex*, a flea]: species of Mint (q.v.). The name P. is given in N. America to a small plant, *Hedeosma pulegioides*, allied to the mints, and having, like them, a pleasant aromatic smell, and a warm pungent taste: it is much in use in domestic medicine, in the form of a warm infusion to promote perspiration and as an emmenagogue.

## PENOBSCOT—PENOBSCOTS.

**PENOBSCOT**, *pé-nöb'sköt*, RIVER: stream in Maine, rising near the centre of the state by two branches, from a chain of lakes extending n.w.; and after a s. by w. course of 135 m. from the junction, or 275 m. in all, empties into Penobscot Bay, a broad and sheltered opening into the Atlantic Ocean, 20 m. wide, with several large islands. Its chief towns are Belfast, at its mouth; Bangor, 50 m. above, where falls supply power to saw-mills and factories; Castine, and Bucksport. It is navigable to Bangor, where there is a tide of 20 ft. The chief trade is pine timber.



Pennyroyal.

**PENOBSCOTS**, *pé-nöb'sköts*, AND **PASSAMAQUODDIES**, *päs-a-ma-kwöd'iz*: tribes of Indians in Maine; the former on an island in the Penobscot river, near Oldtown; the latter near Passamaquoddy Bay. They are members of the Abenaki branch of Algonquins, and closely connected with the Indians in New Brunswick. By the early French settlers they were called Malecites and Etechemins. For their services in the revolution the colonists gave them a large tract of land on the banks of the Penobscot river, the larger part of which they have sold. The Penobscots have a fund of about \$50,000, controlled by the state for their benefit. They are Roman Catholics, and have several religious books in their own language. Schools are maintained and the people choose their own civil officers. Each tribe has about 500 members.



## PENOLOGIST--PENSILE.

**PENOLOGIST**, n. *pē-nōl'ō-jĭst* [L. *pænālis*, penal—from *pæna*, punishment; Gr. *logos*, discourse (see **PENAL**)]: one who studies the various kinds of punishment as awarded to criminals, with view to their reformatory effect.

**PENRITH**, *pĕn'rĭth*, local pron. *pĕ'rĭth*: market town of Cumberland, England, in a picturesque and fertile valley, with rich and striking scenery; on the Carlisle and Lancaster railway, 17 m. s.e. of Carlisle. In the parish churchyard is a monument of great antiquity, of two pyramidal stones about 12 ft. high, known as the 'Giant's Grave.' The town contains an ancient free grammar-school, and other educational institutions. A new and beautiful church, in the style of the 13th c., was consecrated here 1850. There are iron-foundries, saw-mills, and breweries. Pop. (1871) 8,317; (1881) 9,268; (1891) 8,981.

**PENRYN**, *pĕn-rĭn'*: municipal and parliamentary borough and market town of Cornwall, England, in a warm, sheltered, and richly productive valley; on the Plymouth and Falmouth railway, two m. w.n.w. of Falmouth. It stands on a low hill projecting e. into Falmouth Harbor. From quarries in the vicinity is obtained the famous P. granite—of which Waterloo Bridge, the Chatham Docks, and a great number of other important public works are constructed: 20,000 tons of granite have been exported in the year, but the quantity varies much. Pop. (1891) of municipal borough, 3,256.

**PENSACOLA**, *pĕn-sa-kō'la*: city, port of entry, and cap. of Escambia co., Fla., on the Louisville and Nashville, and the Pensacola and Perdido railroads, and on Pensacola Bay, about 8 m. from the Gulf of Mexico, 64 m. e. of Mobile. There are 10 churches; several good schools; one daily and two weekly newspapers; 3 national banks (cap. \$400,000), and a private bank; a marine hospital; and four hotels. There is abundant supply of water, the streets are lighted with gas and electricity; there is a street railroad, and an organized fire department. There are several fine avenues and a number of small parks. Among the principal buildings are the custom-house, court-house, opera-house, and armory. The lumber and fishing interests are extensive, and there are two iron foundries and an ice factory. The harbor is one of the finest in the United States, and the city has a large commerce. In the year ending 1889, June 30, 622 vessels entered the port, 495 being from foreign lands. Exports were valued \$3,748,154; imports from foreign countries \$37,705.16. The Export Coal Company, which ships Alabama coal to the W. I. has its headquarters at P. The United States has here a navy-yard; and the harbor is defended by Fort Pickens and Fort McRee. The first white settlement was made by Spaniards in the 17th c. Pop. (1870) 3,347; (1880) 6,845; (1890) 11,750; (1900) 17,750.

**PENSILE**, a *pĕn'sĭl* or *pĕn'sĭl* [OF. *pensil*—from L. *pensilis*, hanging—from *pendĕo*, I hang: It. *pensile*]: hanging; suspended above the ground.

## PENSION—PENSIONS AND PENSIONERS.

PENSION, n. *pěn'shŭn* [F. *pension*, a boarding-house, a pension—from L. *pensiōnem*, payment—from *pendo*, I weigh out: It. *pensione*]: annual allowance of money from the public purse (see CIVIL LIST) or from a private person, without an equivalent in labor or otherwise—generally in consideration of past services: V. to grant an annual allowance of money to. PEN'SIONING, imp. PEN'SIONED, pp. *-shŭnd*. PEN'SIONARY, a. *-shŭn-ŭ-rĭ*, receiving a pension; consisting in a pension: N. one who receives a pension; formerly, the chief municipal magistrate of a Dutch town, known as GRAND PENSIONARY (q.v.). PEN'SIONER, n. *-ĕr*, one who receives a pension; a discharged soldier who receives a pension (see PENSIONS AND PENSIONERS): in *England*, in a special sense, one of an honorable band of gentlemen attendant on the sovereign: at *Cambridge* or *Dublin universities*, a student who pays for his own board and other charges—at Oxford such a one is a *commoner*.

PENSION, n. *páng'sĭ-ōng* [F.—see preceding title]: a French boarding-house or school.

PENSIONS AND PENSIONERS, MILITARY AND NAVAL: annual allowances of money from the govt. to its soldiers and sailors;—and the persons receiving the same.

In the British army and navy, there are pensions for good service, for mere faithful ordinary service, for wounds, and to representatives of deceased officers. *Good-Service Pensions* are rewards to selected officers in the British navy for distinguished service. The corresponding P. in the army is called a REWARD FOR DISTINGUISHED SERVICE (q.v.). *Pensions for Long Service* are awarded in the army to non-commissioned officers and soldiers who have served 21 years in the infantry, or 24 years in the cavalry, or earlier if disabled from further service, according to the wounds, loss of health, and conduct of the pensioner. The amount varies from 1½*d.* to 3*s.* 6*d.* a day, the lower rates being mainly confined to negro pensioners from the W. India regiments. Pensioners are either *in-pensioners* of Chelsea (q.v.) or Kilmainham Hospitals, in which case they forego their proper P., and receive board, lodging, and a small sum for tobacco-money, or out-pensioners residing where they please, and drawing their pensions from the staff officers of pensioners, of whom there is one in every considerable town. These men can follow other pursuits, often do so with great success, as their military habits of regularity stand them in good stead in civil life. In particular, railways give employment to great numbers of pensioners, as signalmen, guards, etc. Pensioners in good health, and willing for such service, are enrolled in the 'Enrolled Pensioners,' which forms a defensive corps of veterans belonging to the Army of Reserve. This gives the men some addition to the pension. *Naval Pensions for Long Service* are given to petty officers, seamen, and marines under principles essentially similar to those for the army, except that there are now no in-pensioners. There are also pensions for especial bravery in action, granted with the Victoria Cross (q.v.). Pensions for *wounds* are common to both services, and are limited to officers. In the case of

## PENSIONS AND PENSIONERS.

common soldiers and sailors, wounds may serve to hasten or augment the P. for service (see above); but they have no distinctive P. for wounds.

Widows of commissioned and warrant officers in the army and navy receive pensions so long as they remain unmarried, provided they have been married severally 12 mos. when their husbands die, and that the latter were under 60 years of age (50 for warrant officers) when they married the claimants. Such P. is not granted if the widow be in wealthy circumstances, and lies dormant during a second marriage, though it may be revived should she again become a widow. The amount of P. varies according to rank (see RELATIVE RANK), and there are three distinct classes for each rank: 1st, When the husband was killed in battle, or died within six months of wounds received therein; 2d, When he died from some cause distinctly within the sphere of his duty, though not from wounds in action; 3d, When he died in the course of nature.

*Compassionate allowances* are small additional pensions granted to children of deceased officers, left in unfavorable circumstances. They vary from £5 to £40 each, and can be held by boys till 18 (unless earlier provided for), and by girls until 21, or an earlier marriage, and in some cases by other dependent relatives.

In the United States, 1776, officers serving to the end of the revolutionary war were voted half pay for 7 yrs. thereafter. This, 1780, was extended to widows and orphans of those who lost life in service. Afterward it was made a life-pension, and finally commuted to 5 yrs. full pay. Subsequently all who had been disabled in army or navy services during war, whether officers or privates, were to receive aid; and, 1818, aid was granted to veterans of the revolution who, for any reason, were in need. The pensions to revolutionary soldiers were, 1832 (nearly 50 yrs. after the war), made a fixed sum for two years or more of service, and a proportionate sum for less. The last pensioned soldier under this act died 1866. Pensions for civil service were enacted 1869, for the benefit of retiring judges of the U. S. courts; and, later for the life-saving department, etc. Survivors of the war of 1812 were pensioned 1871 (56 yrs. after the war) for 60 days' service, and 1878 for 14 days' (or their widows were pensioned). The Arrears Bill, 1879, has called forth severe animadversion. Soldiers of the Mexican war, 1887 (39 yrs. after the war) were pensioned for disability, conditioned on 60 days' service (or their widows were pensioned); and, that year Pres. Cleveland vetoed a bill granting pensions to all survivors (including those of the civil war) having served 3 months, on evidence of present disability alone, or 'hereafter.' The Dependent Pensions Bill, 1890, June 27, provides for soldiers and sailors of the civil war who served 90 days and are disabled, and for their widows, children under 16 years, and dependent parents. The following tabular statement begins 1862, after pensions were cut off from the seceding states, there having been a drop of 477 pensioners and \$282,000 disbursement from 1861.

## PENSIONS AND PENSIONERS.

TABLE OF U. S. PENSIONERS AND DISBURSEMENTS, 1862-1890.

Year ending June 30	No. of Pensioners.	Total Disbursements of Pension Dept.	Year ending June 30	No. of Pensioners.	Total Disbursements of Pension Dept.
1862	8,159	\$ 790,819	1877	232,104	\$ 28,580,157
1863	14,791	1,044,364	1878	223,998	26,844,415
1864	51,135	4,521,622	1879	242,755	33,780,526
1865	85,986	8,542,885	1880	250,802	57,240,540
1866	126,722	13,250,980	1881	268,830	50,626,538
1867	152,183	18,681,711	1882	285,697	54,296,280
1868	169,643	24,079,403	1883	303,658	60,431,972
1869	187,963	28,445,089	1884	423,756	57,273,536
1870	198,686	27,780,811	1885	345,125	65,693,706
1871	207,495	33,077,383	1886	365,783	64,584,270
1872	232,229	30,169,341	1887	406,007	74,815,486
1873	238,411	29,185,289	1888	452,557	79,646,146
1874	236,241	30,593,749	1889	489,725	89,131,968
1875	234,821	29,683,116	1890	537,944	109,357,534
1876	232,137	28,351,599			

In 1893 the number of pensioners was 966,012 and the disbursements \$158,155,342; in 1896 the corresponding figures were 970,678 and \$139,280,075; in 1898 they were 993,714 and \$145,748,865; in 1900, 993,529 and \$139,381,522; in 1901, 997,735 and \$139,582,231; in 1902 999,446, and \$138,491,822; total disbursement for 40 years \$2,841,048,064. In 5 months after the Dependent Pensions Act was signed, 530,000 claims under the act were on file, and were said to be coming in at the rate of 10,000 a day, though it was stated that the bill was to provide for not over 300,000. Pensions are often increased by re-rating, limited now by the law to results of gun-shot wounds, and to cases of disease erroneously adjudicated, provided the appeal be made within 12 mos. after rating. Additional pension may be claimed on all the new disabilities that the applicant may have overlooked or the dept. may have ignored; lost pensions may be restored; rejected claims reopened; "charge of desertion removed" (by pension attorneys). A series of bounties, from \$100 to \$4,000, are open to claim by soldiers or their heirs. There is a long list of pathological sequences on which claim may be made, e.g., diseases referred to, former sunstroke, catarrh, vaccination, diarrhea, etc. Numerous private bills have been passed by congress for individual relief, or as honorary to widows of presidents, etc.

The classification of pensioners, 1890, June 30, showed the following: army invalid pensioners 392,809; army widows, minor children, and dependent relatives 104,456, navy invalid pensioners 5,274; navy widows, minor children, dependent relatives 2,460; survivors of war of 1812 are 8,610; survivors of Mexican war 17,158; widows of soldiers of Mexican war, 6,764; widows of revolutionary soldiers 23, daughters pensioned by special act, 2. Survivors of war of 1812 \$38,847; widows of same \$1,263,239; of war with Mexico, \$1,728,027; widows of same \$695,054. Total number of survivors of civil war was reckoned by the commissioner at 1,246,089, of whom 831,089 were probably subject to ordinary life-tables, that is, their life was not rated as shortened by the service. The number of deserters during war is estimated at 121,896. Of 460,282 claims sent in for 3 months end-

## PENSIONS AND PENSIONERS.

ing 1890, Sep. 30, under the new dependent pensions law, 50 per cent. were by persons who already had claims on file. Of original or first claims granted for the year ending 1890, June 30, the average value (including arrears) was \$485.71; average value of each pension \$133.94. The whole number of pensioners on the roll 1896, June 30, was 970,678—a gain of only 154 over the total for 1895. That the death-rate was very large is shown by the fact that 40,374 new pensioners had been added and 3,873 restored, making a total of 44,247. The amount expended for pensions was \$138,214,761.94—a decrease of \$1,592,575.36 as compared with 1895. The average annual value of each pension was \$133.39. There were 495,664 claims pending. In 1902 the pensioners of the war of the Revolution numbered 8 (women); of the war of 1812, one survivor and 1,317 widows; of the war with Mexico, survivors 6,828, widows 8,017; of Indian wars, survivors 903, widows 3,320; war with Spain, invalids, 6,611, widows 2,854.

Some inequalities of distribution have been noticed: e.g., N. Y. furnished 467,047 soldiers in the civil war, and has 88,269 pensioners; Ind. furnished 187,147, and has 66,586 pensioners; Ohio supplied 316,659, and has 104,060 pensioners.

Some southern states have granted pensions to confederate soldiers or their widows: e. g., N. C. (1889), 3,884 pensioners, of whom 2,687 were widows—average \$7.65 each; new law went into effect 1890, grants the totally disabled \$100, the partially \$50 to \$75, but no one who owns \$500 to be entitled to relief. S. C. (1888) appropriated \$50,000; 1,949 claims granted; average \$23. Fla. (1889) appropriated \$35,000 for pensions ranging from \$30 to \$150.

**PENSION LAWS.**—Under existing statutes the following classes of persons are entitled to pensions.

Under sections 4,692 and 4,693, United States Revised Statutes—

1. Any officer, including regulars, volunteers, and militia, or an officer of the marine corps or any enlisted man, however employed, in the military or naval service of the United States or in its marine corps.

2. Any master serving on a gunboat, or any pilot, engineer, sailor, or other person not regularly mustered, serving upon a gunboat or war vessel of the United States, disabled by any wound or injury received, or otherwise incapacitated while in the line of duty for procuring his subsistence by manual labor.

3. Any person not an enlisted soldier in the army, serving for the time being as a member of the militia of any state, under orders of an officer of the United States, or volunteered for the time being to serve with any regularly organized military or naval force of the United States, or who otherwise volunteered and rendered service in any engagement with rebels or Indians, disabled in consequence of wounds or injury received in the line of duty in such temporary service; but no claim of a state militiaman or non-enlisted person shall be valid, unless prosecuted to a successful issue prior to 1874, July 4.

4. Any acting assistant or contract surgeon—

## PENSIONS AND PENSIONERS.

5. Any provost marshal, deputy provost, or enrolling officer disabled by reason of any wound or injury received in the discharge of his duty to procure subsistence by manual labor.

Section 4,702—

The widows and minor children of those embraced in sections 4,692 and 4,693.

Section 4,705—

Widows of colored and Indian soldiers and their minor children.

Section 4,707—

Dependent mothers, fathers, and brothers and sisters of those embraced in section 4,692 and 4,693.

Section 4,728—

Provides pensions for officers and seamen of the navy disabled prior to, 1861, Mar. 4.

Section 4,729—

Pensions widows and minors of officers and seamen of the navy disabled prior to 1861, Mar. 4.

Section 4,730—

Pensions regulars or volunteers disabled in the Mexican war.

Section 4,731—

Pensions widows and children of regulars or volunteers who died by reason of injuries or disease contracted in Mexican war.

Section 4,732—

Pensions widows and minor children of persons engaged in Mexican and various Indian wars.

Section 4,736—

Pensions soldiers and sailors who served in the war of 1812.

Section 4,738—

Pensions surviving widows of officers, soldiers, and sailors of the war of 1812.

Section 4,741—

Pensions officers and seamen of revenue cutters who have been or may be disabled or wounded in discharge of their duty while co-operating with the navy by order of the president.

Section 4,761—

Wounded privateersmen.

Act of 1875, Mar. 3—

§ Pensions widows, children, dependent mothers and fathers, or orphan brothers and sisters of those soldiers who were murdered by guerillas at Centralia, Mo., in 1864.

Act. of 1887, June 29—

Pensions surviving soldiers and sailors of the Mexican war and the widows of the same.

Act of 1890, June 27—

Pensions soldiers and sailors of the war of the rebellion who served 90 days and were honorably discharged the service, and who are incapacitated for performance of manual labor, and for the widows, children, and dependent parents.

## PENSIVE—PENTADELPHOUS.

**PENSIVE**, a. *pěn'siv* [F. *pensif*, pensive—from *penser*, to think—from L. *pensārē*, to weigh: It. *pensivo*, pensive]: *literally*, weighing, pondering, or considering in the mind; thoughtful and sad, or melancholy. **PEN'SIVELY**, ad. *-lī*. **PENSIVENESS**, n. *-něs*, thoughtfulness; seriousness.

**PENSTOCK**, n. *pěn'stök* [*pen* 2, and *stock*]: the sluice or flood-gate of a mill-pond.

**PENT**: see under **PEN** 2.

**PENT**, *pěnt*, **PENTA**, *pěn'tă*, **PENTE**, *pěn'tě* [Gr. *pentě*, five]: a prefix signifying 'five.'

**PENTACAPSULAR**, a. *pěn'tă-kăp'sŭ-lěr* [Gr. *pentě*, five; L. *cap'sula*, a small box]: having five cells or cavities.

**PENTACHORD**, n. *pěn'tă-kawrd* [Gr. *pentě*, five; *chordē*, a string]: a musical instrument of five strings; a system or order of five sounds.

**PENTACLE**, n. *pěn'tă-kl* [It. *pentacolo*, a talisman, a charm: Gr. *pentě*, five]: a five-sided head-dress of fine linen worn as a defense when invoking evil spirits; a figure composed of two equilateral triangles intersecting each other so as to form a six-pointed star, used with superstitious import by the astrologers and mystics of the middle ages.

**PENTACOCOUS**, a. *pěn'tă-kök'kŭs* [Gr. *pentě*, five; *kokkos*, a kernel]: having or containing five seeds or grains.

**PENTACRINUS**, n. *pěn tăk'rĭ-nŭs*, or **PENTACRINITE**, n. *-rĭ-nĭt* [Gr. *pentě*, five; *krĭnon*, a lily]: genus of *Echinodermata*, of the order or family *Crinoideæ*, remarkable as containing the only permanently stalked Crinoideæ, or Crinoideæ believed to be permanently stalked, now known; thus the only true living representative of the fossil Encrinites (q.v.). The genus P. has a long pentangular column of numerous joints, from which there arise at intervals many whorls of unbranched arms, and which bears at its summit a disk at first divided into five radiating members, afterward branching into ten arms, each further subdivided. The whole of this skeleton is calcareous, but united by cartilages, and covered with fleshy integument. *P. Caput Medusæ*, the **MEDUSA'S HEAD**, is found in the W. Indian seas, and is very rare in collections, being dredged up only from waters of considerable depth; from which cause also the nature of the base of the column is not certainly known. The stem is more than 12 in. long.—The fossil species of P. are numerous in the Lias and Oolite formations. They gradually become fewer in the newer rocks.—The stalked young of *Comatula rosacea* was formerly regarded as a P., and described under the name *P. Europæus*. See **CRINOIDS**.

**PENTAD**, n. *pěn'tăd* [Gr. *pentě*, five]: in *chem.*, a quinivalent element; an element of five equivalents.

**PENTADACTYL**, a. *pěn'tă-dăk'tĭl* [Gr. *pentě*, five; *dak'tulos*, a finger or toe]: having five fingers or toes; having a structure resembling five fingers.

**PENTADELPHOUS**, a. *pěn'tă-děl'fŭs* [Gr. *pentě*, five; *adel'phos*, a brother]: in *bot.*, having the stamens arranged in five bundles or divisions.

PENTADESMA--PENTASEPALOUS.

PENTADESMA, *pěn ta-dēs'ma*: genus of trees of nat. order *Guttiferae*, to which belongs the BUTTER-AND-TALLOW TREE of Sierra Leone, *P. butyracea*, a tree 60 ft. high, producing a conical fruit of the size of a very large pear, the pulp of which abounds in a yellow oily substance, with a strong flavor, somewhat resembling that of turpentine, yet much used by the natives as an article of food.

PENTAGON, n. *pěn'tă-gŏn* [F. *pentagone*, five-cornered: Gr. *pentē*, five; *gōniā*, a corner or angle]: a figure of five sides and five angles—if the sides are equal, it is called *regular*, if unequal, *irregular*. PENTAG'ONAL, a. *-tăg'ŏ-năl*, or PENTAG'ONOUS, a. *-tăg'ŏ-nūs*, having five corners or angles. PENTAG'ONALLY, ad. *-lĭ*.

PENTAGRAPH, n. *pěn'tă-grăf* [Gr. *pentē*, five; *graphō*, I write]: an implement for enlarging or diminishing copies of drawings.

PENTAGYN, n. *pěn'tă-jĭn* [Gr. *pentē*, five; *gŭnē*, a woman or female]: a plant whose flowers have five pistils or five distinct styles. PENTAGYN'IAN, a. *jĭn'ĭ-ăn*, or PENTAGYNOUS, a. *pěn-tăj'ĭ-nūs*, having five pistils or styles.

PENTAHEDRON, n. *pěn'tă-hē'drŏn* [Gr. *pentē*, five; *hēdra*, a seat or base]: a solid figure having five equal sides. PENTAHEDRAL, a. *-hē'drăl*, or PENTAHEDROUS, a. *-drŭs*, having five equal sides.

PENTAHEXAHEDRAL, a. *pěn'tă-hēks'ă-hē'drăl* [Gr. *pentē*, five; *hex*, six; *hēdra*, a base]: exhibiting five ranges of faces, one above another, each range containing six faces.

PENTAMEROUS, a. *pěn-tăm'ēr-ŭs* [Gr. *pentē*, five; *mēros*, a part]: in *bot.*, composed of five parts; having the elements of the floral whorls five in number, or multiples of five. PENTAM'ERA, n. plu. *-ēr-ă*, in *zool.*, a section of the beetle tribe having five joints on the tarsus of each leg. PENTAM'ERAN, n. *-ēr-ăn*, one of the pentamera.

PENTAMETER, n. *pěn-tăm'ĕ-tēr* [Gr. *pentē*, five; *metron*, a measure]: in *anc. poetry*, a verse of five feet: ADJ. having five metrical feet.

PENTANDER, n. *pěn-tăn'dēr* [Gr. *pentē*, five; *anēr* or *andra*, a man or male]: a plant of the class PENTAN'DRIA, *-drĭ-ă*, characterized by hermaphrodite flowers with five stamens. PENTAN'DRIAN, a. *-drĭ-ăn*, or PENTAN'DROUS, a. *-drŭs*, having five stamens.

PENTANGULAR, a. *pěn-tăng'gŭ-lēr* [Gr. *pentē*, five; L. *angulus*, a corner]: having five corners or angles.

PENTAPETALOUS, a. *pěn'tă-pĕt'ă-lŭs* [Gr. *pentē*, five; *pet'alon*, a petal]: having five petals or flower-leaves.

PENTAPHYLLOUS, a. *pěn-tăf'il-lŭs* [Gr. *pentē*, five; *phullon*, a leaf]: having five leaves.

PENTARCHY, n. *pěn'tăr-kĭ* [Gr. *pentē*, five; *arche*, rule]: a government consisting of five persons.

PENTASEPALOUS, a. *pěn-tă-sĕp'ă-lŭs* [Gr. *pentē*, five; and Eng. *sepal*]: having five sepals.



## PENTASPERMOUS—PENTATEUCH.

PENTASPERMOUS, a. *pěn'tă spēr'mūs* [Gr. *pentē*, five; *sperma*, seed]: containing five seeds.

PENTASTICH, n. *pěn'tă-stīk* [Gr. *pentē*, five; *stichos*, a verse]: a poem of five lines or verses.

PENTASTYLE, n. *pěn'tă-stīl* [Gr. *pentē*, five; *stulos*, a column]: an edifice having five columns in front.

PENTATEUCH, n. *pěn'tă-tūk* [L. *pentateu'chus*—from Gr *pentē*, five; *teuchos*, a book; *teuchō*, I make]: the first five books of the Old Testament. PEN'TATEU'CHAL, a. *-tū'kāl*, pertaining to the Pentateuch or five Books of Moses. —*Pentateuch* is a name given by Greek translators to the five books ascribed to Moses, in Hebrew called collectively *Torah* (Law) by way of eminence, or *Chamisha Chumshe Torah* (five fifths of the Torah). *Law* is also the general name by which in both the Old and the New Test. the work or portions of it are referred to and quoted—the words 'of Moses' or 'of the Lord' being added occasionally.

The division into five portions (further divided into 50, 40, 27, 36, 34 chapters, or 12, 11, 10, 10, 11 Parshioth or Sidras respectively, by the Masoretes) is, if not original, at all events of very remote date, certainly anterior to the Septuagint. Genesis, Leviticus, and Deuteronomy, the first, third, and fifth books, form clearly defined and internally complete parts of the work as a whole, and thus, also, fix the limits of the intermediate second (Exodus) and the commencement of the concluding fifth (Deuteronomy). The chief aim of the P. being to trace the origin and history of the Hebrew people to the conquest of Canaan, and to present the theocracy founded among them, the centre is formed by the person of Moses himself, regenerator, leader, and lawgiver of the nation. Genesis, beginning with the history of the creation and antediluvian genealogy from Adam to Noah, in rapid outlines sketches the propagation of the various tribes that descended from the one man who was saved in the Deluge, but dwells with special emphasis upon Shem, from whom sprang, in the tenth generation, Abraham, progenitor of the 'people of the covenant.' The salient events in the lives of his descendants, the Patriarchs, are minutely described; and a fitting close is found in the benediction of Jacob, who, as it were, reinaugurates and confirms all his 12 sons in the covenant made between Abraham and God. Exodus, treating of the liberation of the people from Egypt; their wanderings in the desert; the promulgation of the Law, by which they became emphatically the 'holy nation' and the 'people of the Lord;' and the erection of a visible sanctuary; may be regarded as the nucleus of the work; while Leviticus, the following book, enters into the details of the legislation and the mode of worship; especially the prescriptions concerning sacrifices, festivals, ceremonial purity, and the duties of the priest: it gives but little history. The historical thread is taken up again in Numbers, the fourth book, which, also, side by side with the relation of the events between the Sinaitic period and the beginning of the 40th year after the Exodus, contains many laws explanatory of,

## PENTATEUCH.

or complementary to, those of the former books, together with such as new circumstances had called into existence. A brief recapitulation of the preceding portions; Moses's most impressive and reiterated exhortations to keep that Law, which was now completed, and solemnly transmitted to the Levites; and the death of the great legislator himself; form the chief contents of the fifth book, or Deuteronomy. Thus, the theocratic plan of the work is carried through from beginning to end, coming out more prominently in the three intermediate books, but never entirely lost from sight. Nothing is dwelt or even touched on except that which in some way illustrates either the relation of Jehovah to the people, or of the people to Jehovah; the political, civil, and domestic laws themselves being enumerated only as bearing on the main aim and object of the work.

For the special books, see their respective titles. We have here to consider some questions relating to the work as a whole; principally the question of its authorship and history, as far as these points are not presented under GENESIS. Tradition, embodied in the earliest historical records, mentions Moses as the writer of the complete P., such as it is before us: except of a few verses, describing the last moments of the lawgiver, etc., which were ascribed to Joshua. This tradition has for many a century been almost universally accepted; though at different periods suspicions have been raised respecting this 'authenticity.' The Pseudo-Clementines, e.g., assumed that the Law, orally delivered by Moses to the Elders, had, before and after its being committed to writing, undergone innumerable changes, nay, corruptions; among these the too personal and human conceptions of God, and the unworthy traits recorded of the Patriarchs. Jerome expresses himself in a somewhat doubtful manner on the relation of Ezra as the 'redactor,' or rather 'restorer,' of the Pentateuch. Aben Ezra boldly calls several passages later interpolations, and speaks of others still more poignantly as a *Ssod*, or a 'Mystery,' i.e., as containing difficulties not to be cleared away in consonance with the common belief, which he, however, was too pious wantonly to disturb. Other voices, vaguely lifted up by more or less competent scholars, remained unheard. It was not until long after the Reformation, at the dawn of the exegetical and critical modern age, that the question whether this codex was the work of one man, or even of one age, and what share, if any, Moses had in its composition, began to be discussed seriously and on scientific grounds. Hobbes held that the P. was rather a work on, than by Moses. Spinoza came to the conclusion that to Ezra we are indebted for the book in its present shape, and that it embodies certain genuine portions, collected at a late period, together with a vast amount of later material, added at various periods subsequent to the time of the supposed author. Vitringa, Le Clerc (Clericus), Rich. Simon, and others, followed, resuming and enlarging the discussion chiefly respecting the difficulties which presented themselves in the accounts

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of the creation, and the like, in Genesis: The next, indeed the most important step—because the one which at once removed the question from the field of hazy and timid speculations to that scientific basis upon which it still rests, was taken by Astruc, who, from the marked difference of the Divine names used in Genesis and the beginning of Exodus (see TALMUD: FATHERS OF THE CHURCH) came to the conclusion that these books had been worked up from different original documents, which he called Jehovistic and Elohistie respectively. See GENESIS for the development of this speculation. At the present stage of the investigation the view adopted by very many scholars is the 'complementary theory,' which assumes, with certainty, two or more authors—Jehovists and Elohistie—for the whole of the first four books, at least; the fifth being by some (Delitzsch, Schulz, Kurz, etc.) still ascribed chiefly to Moses's own hand. Only a small apologetic school, of which Hengstenberg long was spokesman, still upholds the sole authorship of Moses for the entire work. The contemporary discussions on these points, which till recent years were chiefly confined to Germany, have now found their way into Britain and this country. The impulse to the controversy in Britain was given principally by Dr. Davidson, the 'Essayists and Reviewers,' and Bp. Colenso; all of whom, on the basis of the German investigations, raised some new points. Innumerable replies, by more or less competent champions, have been issued; but as yet, so far from either of the combatants having declared themselves convinced by the arguments from the other side, the controversy elicits new publications uninter-  
ruptedly.

While endeavoring to trace in outline some chief objections raised against the Mosaic authorship, and the replies thereto, we express no opinion about the superior force of the arguments on either side.

A work, alleged to be the production of one man, it is urged, first, ought to contain neither unnecessary repetitions of considerable length, nor contradictions, nor anachronisms. There ought to be a plan and a unity. Yet there can be no doubt, they say, about the fragmentary character of the P. Many portions, evidently complete in themselves, are strung together without the slightest logical sequence, nay, in unchronological order. As to repetitions and contradictions, there is, to begin with, the very history of the creation, which occurs twice in the first chapters of Genesis, is each time given differently, and in each account the Divine name is consistently mentioned in a different way. The same is said with regard to the account of the deluge, and several incidents in the lives of the Patriarchs; the important conversation between God and Moses respecting Aaron (Exod. iv. 10–16, and vi. 9); the descriptions of the tabernacle; the priestly vestments; the story of the manna as given in Exodus and Numbers; the account of the appointment of the council of the 70 elders in the same books; etc. Again, the work itself sometimes seems to indicate an author who is not the legis-

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lator himself, such as the phrase of Moses being the humblest of men; the account of his own death; the passage in Genesis 'before there reigned any king over the children of Israel' (xxxvi. 31); the occurrence of the name of the city of Dan (Gen. xiv. 14, Deut. xxxiv. 1), so called only after the conquest by that tribe. In Numb. xxxii. 34, we find an enumeration of a certain number of towns and villages built by the tribes of Gad and Reuben—an event which could not have happened during Moses's lifetime; further, the frequent occurrence of the formula 'unto this day' (e.g., Deut. x. 8, where the author speaks of the institution of the Levites as being still in force 'up to this day'), etc. It is contended, also, that the language of the P. varies very little from that of the last prophets, and that it can hardly be assumed that a thousand years should have made no perceptible difference in the idiom; particularly has Deuteronomy been supposed to bear a striking resemblance, in style and language, to Jeremiah. The P. is further said to contain many facts palpably contradictory to natural laws, as they are established in the experience of the whole historical human race, and systematized by science.

Of the many ways to meet these and similar—old and new—objections to the sole Mosaic authorship, the most generally adopted is the theory of 'interpolation,' by which the Apologetic School strikes out 50 or more passages, as not belonging to the original work, but having crept in, by way of commentary, note, or explanation, in post-Mosaic times—the body of the work being thus saved, so to say, by an extensive amputation. As to the argument from the language, it is said that the P. being *the* divine book by way of eminence, and embodying the very phrases used by the Almighty, must needs have served as a model for the next thousand years; and priests and Levites, the teachers of the people, were enjoined constantly to study and read it; hence the small departure in the later writers. Arabic and Syriac, it is argued, did likewise not change essentially for many centuries—an assertion, however, which holds good only when 'many' is taken in a vague sense. That Deuteronomy differs in style and manner, is verbose, etc., is explained by Moses's advanced age. On the other hand, events apparently not in harmony with the 'natural laws,' are accepted by the orthodox simply and literally as 'miracles;' while 'conservative' rationalists of the school of Eichhorn, Rosenmüller, and others, who stand by the authenticity of the P., have been at great pains to find some kind of poetical interpretation for them.

Some of the recent attacks on the authenticity are founded chiefly on arithmetical grounds. The numbers of the people, their cattle, and the like, at various periods, do not seem to conform to the laws of natural increase, or even to the geometrical limits within which they were at times stated to have been confined. Among the direct proofs, however, proffered by the defenders of the authenticity, the following chiefly deserve attention. Deuteronomy, it is averred, can be the work only of Moses. He

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speaks in it to the men whom he has led for many years, as one who has lived through all the events himself. There is no possibility of any one imitating the local coloring in such a manner. If, then, Deuteronomy must be allowed to be the work of Moses, the three preceding books, to the contents of which frequent allusion is made, must equally be supposed to be finally redacted, if not written, by the same hand; and it further follows naturally, that the introduction to these books, which is Genesis, must have emanated from it. Again, any one writing after Moses could not possibly have possessed the extraordinarily correct knowledge of contemporary Egypt and Arabia, which appears throughout the Pentateuch. A writer who might be supposed to have acquired it by study of antiquities, must, it is said, have betrayed himself on every page by inaccuracies and anachronisms. Nineveh is in Genesis a city of as yet little importance; while Resen, of which no trace is found in any other part of the Bible, is the great metropolis of Assyria of the time. Tyre, great in the days of David, and mentioned already in Joshua, is not mentioned in the P., where a later writer would certainly have spoken of it in connection with Sidon. The Canaanite gods and altars are often spoken of; never their temples, of which yet we read in Joshua. Why, then, should that very ancient author, to whom must needs be traced the Pentateuch, not be Moses himself, rather than some contemporary of Moses? The fragmentary, abrupt, and, as it were, confused character of the work, the apologists further urge, so far from testifying against Moses, confirms the tradition of his authorship. Would not a later historian have worked the mixed mass of historical, geographical, legal, and personal material into a methodical and systematical whole? Who else could have imparted to the book the impress of a diary, so to say, but the man who was in the midst of the events, jotting down all the items important either in his own individual or the national career? And who but one standing in its very centre could depict with such glowing colors the life that moved around him?—But a further direct argument for the authenticity is found by them in the very item of the language of the P. True, they say, it resembles as much as can be that of the later books, because, as we said before, it remained the classical language for all later generations; but, on the other hand, it offers certain peculiarities—such as the use of a common pronoun of the third person singular for both the masculine and feminine genders; the same term for boy and girl; and the like archaisms—all of which distinctly prove it to be a work of very much older date. The existence of an ancient Mosaic code of laws further appears proved beyond any doubt by the constant recurrence of quotations from ‘the Law of Jehovah’ or ‘the Law of Moses’ throughout the other books of the Old Testament from Joshua to Hosea. Had there in reality been no such code in existence, the authors of the different biblical works could not possibly have so unanimously spoken of it without betraying a conscious forgery somewhere. That Ezra should have been the author, or, at all

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events, the refounder of the P., is equally improbable, on account of the spirit, tone, language, and all those smaller peculiarities of which mention has been made; and he would, on the other hand, never have been able so skilfully to avoid his own individual manner and style, as it appears in his own book. The Samaritan P., it is further said, which, with a very few characteristic alterations, is an accurate transcript of our P., would have been an utter impossibility, considering the hostile relations between the Samaritans and the Jews, if it had not been well known as a genuine document before the division of the empire. That Hilkiah, who is said to have *found* the Book of the Law in the temple in the days of Josiah (II Kings, xxii.; II Chron. xxxiv.), should have been its real author—an opinion first advanced by De Wette—would imply a complicity in the forgery not only on the part of Jeremiah, Huldah, and the elders, but of almost the whole people; among whom, on the contrary, there certainly seems to have been living a very vivid tradition of the former existence of the book or some of its portions at least. Moreover, had it been written first in those days, there surely would have been introduced some kind of prophetic allusion to the royal house of David, or, at all events, a pedigree and origin differing from the incestuous one given in Gen. xxxviii. Deuteronomy would altogether have changed its language about royalty (xvii. 15-20); and Joseph's tribe would not have stood out so prominently as a favored tribe. The alleged difficulties respecting the numbers are explained away more or less convincingly—in the most difficult cases, by miraculous interference. Corruptions, interpolations, and the many fates that befall ancient documents, are allowed to have crept in, in some places; though this argument is not advanced by those who hold that a special Providence watched over the Divine work. In all other respects, they hold these books are exactly as they were written by Moses under direct 'Inspiration.'—Thus far, in outline, the pros and contras most commonly adduced and most worthy of consideration.

A few rationalistic critics, however, have gone so far as to deny the very possibility of Moses having given the laws contained in the P., founding their objections on the ground chiefly that he was not likely to have been versed in the art of writing to an extent which the composition of these laws would presuppose. Egyptian characters, with which he might have been familiar, could not have been used for Hebrew composition; and the Hebrews themselves, uncultivated as they were, did not possess any characters of their own. There has only, in reply to these objections, the fact to be stated, that a soberer criticism of more recent date has found itself obliged, in deference to certain paleographical and other scientific truths, to give up most of these points; or, at all events, to found no such sweeping condemnation on those which still remain. It is now noticeable, and increasingly so—whichever of the hypotheses (against the sole Mosaic authorship) enumerated at the beginning is assumed—that the ground-work of the legislation is traced back, by

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almost unanimous consent, to the historical person of Moses, who is no longer the mythical demi-god of barbarous hordes, but a man. The final redaction of these laws—of which many of later date are found wholly inconsistent with the earlier corresponding laws—as of the whole of the Pentateuch, is now, if not almost as unanimously, certainly quite generally, placed in ages long after him.

In the contemporary 'moderate' school in England and the United States, so far as may be gleaned from their writings, the following seems the prevalent opinion on the point of the Mosaic authorship: It is allowed that Moses did not write the whole of the Pentateuch, but portions of Exodus, Leviticus, and Numbers, and the whole of Deuteronomy except the account of his death, and such portions as palpably show an author who points to the imminent dissolution of the kingdom. That even the fundamental Law (Decalogue) should be found in two varying versions, they hold, strengthens rather the assumption of their genuine Mosaic authorship in some original shape. The later editor, finding two different recensions made by contemporaries or in subsequent ages, embodied them both, on account of their paramount importance, literally. Genesis was worked up from ancient documents, composed by various writers, living at various 'prehistoric' periods, either by Moses himself, or, under his supervision, by some of the elders of Israel. The first redaction of the five books as a whole took place after the conquest of Canaan, through Joshua and the elders; the second and final redaction, however, in which it received its present shape, is to be dated from the time of Ezra, after the return from the exile.

The majority of continental modern critics of the more moderate stamp—who repudiate the notion of their belonging to the advanced rationalistic party—hold opinions very different from the British and American moderates; and since they have found professed partizans in these countries, foremost of whom is Dr. Samuel Davidson, his own words are here quoted (*Introduction to the Old Testament*): 'There is little external evidence for the Mosaic authorship; and what little there is, does not stand the test of criticism. The succeeding writers of the Old Testament do not confirm it. The venerable authority of Christ himself has no proper bearing on the question. The objections derived from internal structure are conclusive against the Mosaic authorship. Various contradictions are irreconcilable. The traces of a later date are convincing. The narratives of the Pentateuch are usually trustworthy, though partly mythical and legendary. The miracles recorded were the exaggerations of a later age. The voice of God cannot, without profanity, be said to have externally uttered all the precepts attributed to Him. Moses's hand laid the foundation of the edifice of God's Word, which has grown into the proportions in which we now possess it; but he was not the first writer who penned parts of the national legends and history. He was emphatically a *lawgiver*, not a historian; a grand spiritual *actor* in the life-drama of the Israelites, who founded

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their theocratic constitution under the direct guidance of the Supreme.'

Meanwhile, however the critics may settle the interesting and important question as to the sole Mosaic authorship of any or all of these books, the question of their Divine inspiration, as of their fundamental verity and value to the world, is not deeply involved therein; but is decided on other considerations than those prominent on either side in this debate.

A few words must be added respecting the use of the P. According to Deut. xxxi. 24, and following, it was preserved in the Ark of the Covenant. Every seventh year, it had to be read to the people in public; and probably the Schools of Prophets, instituted at the time of Samuel, propagated its use by copies. Moreover, certain priestly, sanitary, and other laws required constant reference to it, so that certain portions of it seem to have been widely in use at an early period. Every synagogue is, according to the traditional Law, to possess a roll of the Torah, written on parchment, and under certain regulations strictly insisted on; out of which roll certain portions are read on Sabbath and feast days; and, according to the ancient custom in Palestine, when Monday and Thursday were the market-days—when the country people came to town and the judges sat—also on those days. A smaller portion (*Parasha*) is read on these and on the afternoon service of the Sabbath than on the Sabbath morning service, when a whole *Sidra* is read, or rather chanted, according to the *Neginah*, which is note and accent at the same time. The Samaritans have, of all biblical books, adopted only the P., with slight variations (see SAMARITAN P.), their Book of Joshua being a very different work from ours; and certain very recent accounts of their possessing also other adaptations of our biblical books require confirmation. For the different translations of the P., ancient and modern, see BIBLE. The first printed ed. of the P. dates Bologna 1482, fol. The name of commentators and writers on the whole of the P., both in and out of the church, is legion. Among the foremost, besides the church Fathers (Augustine, Jerome, Ephraem Syrus, etc.) and the mediæval Jewish commentators (*Raspi*, D. Kimchi, Aben Ezra), are Calvin, Luther, Grotius, Père Simon, Le Clerc, Michaelis, Eichhorn, Jahn, De Wette, Keil, Hävernick, Bleek, Hengstenberg, Ranke, Kurtz, Stähelin, Ewald, Bertheau, Colenso, Graves, Stuart, Bush, etc.



## PENTECOST—PENTILE.

**PENTECOST**, n. *pěn'tě-köst* [Gr. *pentēcostē*, the fiftieth day, with *hēmera*, day, understood—from *pentē*, five, and a supposed *-konta*, ten]: great Jewish festival celebrated on the 50th day after the feast of the Passover; now known in the Anglican and some other churches as Whitsuntide. **PEN'TECOS'TAL**, a. *-kös'täl*, pertaining to Pentecost. **PENTECOSTALS**, n. plu. oblations at the feast of Pentecost formerly made by parishioners to their parish priest.—*Pentecost* was the Jewish name for their feast on the 50th day after the Passover, in celebration of the 'ingathering,' and in thanks giving for the harvest: see **FESTIVALS**. From the Jewish use it was introduced into the Christian, and with special solemnity, as being the day of the descent of the Holy Spirit on the apostles and of the first solemn preaching of the gospel of Christ in its complete historic manifestation. From early times P. has been regarded as one of the great festivals of the Christian year, and it was chosen as one of the times for the solemn administration of baptism, in commemoration of the great baptism by the Holy Spirit and by fire, promised by Christ to his disciples, which occurred on the 10th day after his ascension. The English name of the festival, *Whit-Sunday*, is derived from the *white* robes in which the newly baptized were clad (see **CANDIDATE**). It is regarded as specially sacred to the Holy Spirit as a Divine Personality, to whose honor the services of the day are directly addressed. Many curious usages were anciently connected with the celebration. The dove being held as an emblem of the Holy Spirit in some churches, a figure of a dove, suspended by a cord from the ceiling, was lowered so as to alight on the high altar during the service. In others, figures of cloven tongues, or red rose-leaves, were similarly introduced. The latter practice is said to be still retained at Messina, but in general these scenic representations have been discontinued. In some places, however, in the East as well as in the West, the practice prevails of decorating the churches with evergreens and flowers, as in England at Christmas. The whole time intervening between Easter and Pentecost is celebrated in the Rom. Cath. Church with special solemnity and with some peculiar usages, and of this something is retained in the Church of England.

**PENT-HOUSE**, n. *pěnt'-hous* [a corruption of OE. *pentice* or *pentis*—from OF. *appentis*, a sloping shed; L. *appendicium*, *appendix*, an appendage: It. *pendice*, any bending or down-hanging: F. *pente*, a slope—from L. *pendere*, to hang]: a shed standing out aslope from the main building to protect a doorway, gate, window, etc. **PENT-ROOF** [F. *pente*, a slope, and Eng. *roof*]: a roof whose slope is wholly on one side.

**PENTILE**: see **PANTILE**.

## PENTLAND—PENUMBRA.

**PENTLAND FIRTH**, *pěnt'land fěrth*: channel or strait between the Atlantic and German oceans, separating the mainland of Scotland from the Orkney Islands; 17 m. long, and 6 to 8 m. wide. The island of South Ronaldsay lies about seven m. from Duncansby Head. The Pentland Skerries, 5 m. n.e. of Duncansby Head, consist of two islets and of several contiguous rocks. On the larger of the islets is a light-house with two lights, 170 and 140 ft. respectively above sea-level; lat. 58° 41' n., long. 2° 55' w. Off the coast of Caithness, and separated from it by a channel called the Inner Sound (about 2 m. wide), is the island of Stroma; and 3 m. n.n.e. of Stroma is the islet of Swona, one of the Orkneys. On the n. side of Stroma is the small vortex or whirlpool of Swalchie, and w. of it are the breakers called the 'Men of Mey,' supposed to be produced by a current setting strongly on a concealed reef. The navigation of the P. F. is more dangerous than that of any other portion of the Scottish seas. A current from w. to e. flows through it with velocity of 3 to 9 m. an hour, and causes numerous eddies and whirlpools. It is estimated that about 4,000 vessels with cargoes pass through the firth annually.

**PENTLAND HILLS**: range of hills in the Lowlands of Scotland, extending n.e. from the border of Lanarkshire to the centre of the county of Edinburgh, and to within 4 m. of the city of Edinburgh; mean height above 1,000 ft.; the highest summit, Carnethy Cairn, in Edinburghshire, 1,884 ft.

**PENTREMITES**, n. plu. *pěnt'trě-mīts* [Gr. *pentě*, five; *trěma*, a hole, a perforation]: in *geol.*, a genus of fossil star-fish—so called from the five conspicuous apertures in the calyx. **PENTREMITE LIMESTONE**, a term applied by Amer. geologists to the carboniferous limestone of the U. S., from the vast number of pentremites which it contains.

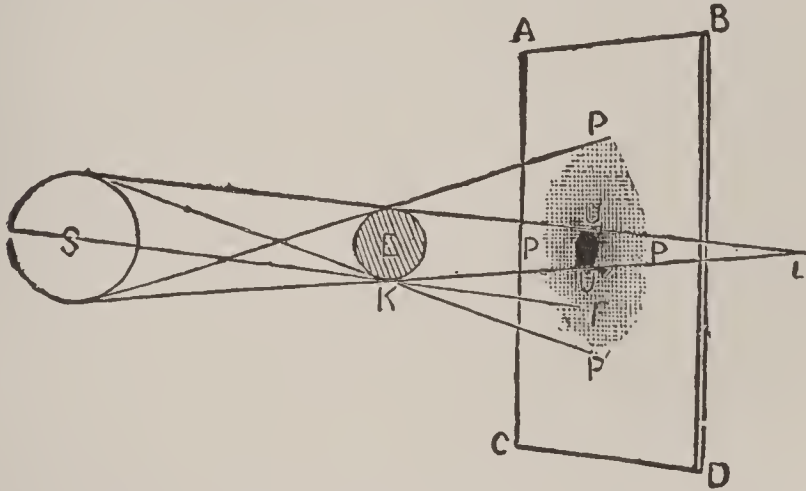
**PENTSTEMONS**, n. plu. *pěnt-stě'mōnz* [Gr. *pentě*, five; *stēmōn*, the warp in the ancient upright loom, a stamen]: a genus of very ornamental plants, with handsome variously colored flowers, ord. *Scroph'ulārīācěæ*.

**PENULT**, n. *pě-nŭlt* or *pě-nŭlt'*, or **PENULTIMA**, n. *pě-nŭl'tĭ-mă*, and **PENULTIMATE**, n. *-tĭ-măt* [L. *penul'tĭmus*, the last but one—from *pěně*, almost; *ultĭmus*, last]: the last syllable of a word except one. **PENULTIMATE**, a. denoting the last syllable but one of a word.

**PENUMBRA**, n. *pě-nŭm'bră* [L. *pěně*, almost; *umbra*, a shadow; F. *pénombre*]: faint shadow or obscurity on the exterior of the perfect shadow in an eclipse. The name is applied also in art to that part of a picture where the light and shade appear to blend with each other.—When the shadow of an opaque object is thrown upon a surface at a little distance by a light of considerable apparent size, it is observed that the shadow is divided into two portions—a dark portion in the centre, and a lighter portion surrounding it. The former is known as the *umbra*, or complete shadow; the latter as the *penumbra*, or partial shadow. If

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S be the illuminating body, E the object whose shadow is cast on the surface ABCD, it is seen that the small portion, *uu*, receives (omitting all consideration of refraction, dispersion, etc., of light) *no* light from S, while the whole surface outside of PPPP' is completely illuminated. The



point P' receives light from the whole of S; the point F is only half-illuminated, and that by the lower part of S, the illumination of the points becoming less and less as they approach *u'*, which is unilluminated. The portion within *uu'* is the umbra, and that between the boundaries PPPP' and *uu'* is the penumbra, which, as we have seen, gradually shades from full light at the outer boundary to utter darkness at the inner, so that it is almost impossible exactly to note its limits on either side. This phenomenon can occur only when the illuminating body is of such size, real or apparent, as to make the angle P'Ku' of sensible magnitude; and the nearer the body E approaches the plane on which its shadow is cast, the larger is the umbra and the smaller the penumbra; while by increasing the distance between E and the plane, so that the point L shall fall between them, the umbra is made to vanish, and the penumbra is increased. Thus, the shadow of a man cast by the sun on the ground presents almost no penumbra; the shadow of the earth thrown by the sun upon space at the distance of the moon gives a penumbra many times as large as the umbra; and sometimes, when the moon is new at her apogee, for instance, her shadow cast upon the earth exhibits no umbra. Spectators on the earth who see a partial eclipse of the sun are situated within the penumbra; but within the umbra when they observe a total eclipse; while if the eclipse be annular, the umbra does not exist in the shadow cast by the moon on the earth's surface. See ECLIPSE.

**PENURY**, n. *pě-nŭ-rĭ* [F. *pénurie*—from L. *penŭriă*, need of anything; It. *penuria*]: want of the necessaries of life; need; poverty. **PENURIOS**, a. *pě-nŭ'rĭ-ŭs*, excessively saving in the use of money; affording little; niggardly. **PENURIOSLY**, ad. *-lĭ*. **PENURIOSNESS**, n. *-nĕs*, the state or quality of being penurious; a sordid disposition to save money; parsimony.—**SYN.** of 'penurious': sparing; mean; scant; parsimonious; saving; economical; covetous; miserly.

## PENZA—PENZANCE.

**PENZA**, *pěn'zá*: central govt. of European Russia, between the govt. of Nijni-Novgorod on the n. and that of Tambov on the w.; 15,000 sq. m. The surface is in extensive and elevated plains, marked occasionally with ridges of low hills. The rivers are tributaries of the Don and Volga, and three, the Khoper, the Soura, and the Moksha, are navigable. The climate, though rather cold in winter, is temperate, agreeable, and healthful. The soil, mostly of black earth, is extremely fertile; and agriculture is the principal employment. Grain of different kinds, leguminous plants, beet-root, flax, hemp, tobacco, and hops are principal products. Much of the grain is used in the numerous distilleries, and considerable quantities of it are exported to the neighboring governments. About one third of the entire area is covered with forests, some of which consist entirely of oak. The manufactories are centred chiefly in the towns; cloth and leather are the principal articles made. Commercial improvement of the government is hindered by lack of direct means of communication with the consuming districts. The principal towns are Penza, Mokshansk, and Saransk. Pop. of govt. (1887) 1,549,969; (1890) 1,596,500; (1897) 1,491,215.

**PEN'ZA**: town of European Russia, cap. of the govt. of P., on the Soura, 220 m. s.s.e. of Nijni-Novgorod. It was founded in the middle of the 17th c. as a defense against Tartar invasion, is a handsome town, occupying an elevation, and containing 19 churches, 2 convents, many gardens, a large park, with a beautiful fruit-garden and a horticultural school. There are cloth-factories, iron-works, tanneries, soap-boiling and candle-making establishments. The principal articles of commerce are corn and timber, which is floated down the Soura during the spring. Pop. (1881) 41,650; (1887) 46,221; (1897) 61,851.

**PENZANCE**, *pěn-záns'*: market and sea-port town, and municipal borough of England, county of Cornwall; on the n.w. shore of Mount's Bay, 22 m. w.s.w. of Falmouth. It is the most westerly town in England—the light-house on its pier being in lat. 50° 7' n., long. 5° 28' w. The town, on a finely-curved shore, surrounded by rocky eminences, and in a fertile district, is exceedingly picturesque in situation; and is noted for its mild though moist climate. Its esplanade, one of the finest in w. England, commands charming land and sea views. The chief buildings, mostly of granite, are the town-hall and corn-market, surmounted by a dome, and the chapels of St. Paul and St. Mary. At P. is a statue to Sir Humphry Davy. There are numerous boarding-houses for visitors attracted hither by the temperate and equable climate, by the beauty of the neighboring scenery, and the curiosities of the district of Land's End. Woolen yarns and cloths are manufactured; the fishery employs more than 2,000 persons; agricultural produce, pilchards, and tin and copper ores from the mines of the vicinity are exported; and timber, iron, hemp, and hides are chief imports. A new floating dock was opened here 1882. One of the Atlantic cables to America comes ashore at P. In 1880 there

## PEON--PEONY.

entered the port 789 vessels, of 65,671 tons; cleared 738, of 59,261 tons. P. was laid in ashes by a party of marauding Spaniards 1595, and was sacked by Fairfax 1646. Pop. (1871) 10,414; (1881) 11,684; (1891) 12,448.

PEON, n. *pē'ōn* [Pers. *piyāda*, a foot-soldier, a pawn at chess—from *pai*, the foot]: one travelling on foot; a foot-soldier in India; a native constable; a day-laborer; in *Sp. Amer.*, one bound to forced labor; a pawn at chess. PEONAGE, n. *-ōn-āj*, a form of servitude or compulsory labor formerly existing in Mexico.

PEON (wood): see CALOPHYLLUM.

PEONY, n. *pē'ō-nĭ* [L. *pæōniā*, so named from its supposed medicinal properties, *Pæon* being the physician of the gods: Gr. *Païōn*, the god of healing], (*Pæonia*): genus of plants of nat. order *Ranunculaceæ*; having large flowers, with five persistent, unequal, leafy, and somewhat leathery sepals, 5-10 petals, many stamens, and 2-5 germens, which are crowned with a fleshy recurved stigma. The leaves are compound, the leaflets often variously and irregularly divided. The fibres of the root are often thickened into tubers. The species are large herbaceous perennials, or rarely half-shrubby; natives of Europe, Asia, and n.w. America. For the beauty of their flowers some of them are much cultivated in gardens, particularly the COMMON P. (*P. officinalis*), native of the mountain-woods of s. Europe, with carmine or blood-red flowers. A variety with double flowers is common.—The WHITE P. (*P. albiflora*) is another favorite species, native of central Asia: its flowers are fragrant.—The TREE P., CHINESE P., or MOUTAN (*P. Moutan*), is a half-shrubby plant, native of China and Japan. In favorable circumstances it attains a very large size and a height of 12 ft. or more. It has been long cultivated in China and Japan; and is now also a favorite ornamental plant in s. Europe and in s. England and Ireland; but the late spring-frosts in north temperate countries are injurious to it, though it can bear severe frost in winter, when vegetation is at a stand. It flowers in spring. The varieties in cultivation are numerous. It is propagated by cuttings, also by grafting. Its germens are surrounded by a cup-shaped lacinated membrane.—The roots of most of the peonies have a nauseous smell when fresh, and those of the Common P. were in high repute among the ancients as an antispasmodic, but their medicinal properties are now utterly disregarded. The globose, shining black seeds of peonies were formerly, in some countries, strung into necklaces, and hung round the necks of children, as *anodyne necklaces*, to facilitate dentition. The Daurians and Mongolians use the root of *P. albiflora* in their soups, and grind the seeds to mix with their tea.

## PEOPLE—PEORIA.

PEOPLE, n. *pē'pl* [F. *peuple*; OF. *pueple*; L. *populus*, the people: It. *popolo*; W. *pobl*, the people: comp. Gael. *pobull*]: the body of persons who compose a community; the multitude; the commonalty; persons in general; inhabitants; a name applied to a separate tribe or nation. V. to settle with inhabitants. PEO'PLING, imp. *-pl'ing*. PEO'PLED, pp. *-pl'd*: ADJ. stocked with people. ONE'S PEOPLE, or ONE'S OWN PEOPLE, in *Scrp.*, ancestors; relations; kindred.

PEOPLE'S PARTY OF THE UNITED STATES, or POPULISTS: see POLITICAL PARTIES.

PEORIA, *pē-ō'rĭ-a*: city, cap. of Peoria co., Ill.; on the Iowa Central, the Chicago Burlington and Quincy, the Chicago Rock Island and Pacific, the Jacksonville Southeastern, the Lake Erie and Western, the Ohio Indiana and Western, the Peoria and Pekin Union, the Peoria Decatur and Evansville, the Rock Island and Peoria, the Toledo Peoria and Western, and the Terre Haute and Peoria railroads, and on the Illinois river, at the s. extremity of Peoria Lake (q.v.), about 160 m. s.w. from Chicago, with which it is connected by the Illinois and Michigan canal. It is built on a sandy plateau, bounded by bluffs 180 ft. in height. There are 47 churches, representing all the principal denominations; a high school and 14 other public schools, a business college, a free German school, besides 11 schools under the supervision of various religious denominations; a fine public library and several scientific and educational societies; an active branch of the Young Men's Christian Assoc.; three hospitals; one monthly, nine weekly, and five daily newspapers, of which three weeklies and two dailies are in German; one savings bank, 4 private banks, and 7 national banks, the latter having an aggregate capital of \$1,450,000. There are 7 loan and homestead associations and an efficient board of trade. The bank clearings 1889 amounted to \$78,000,000. There is an electric street-car service; there are also horse-cars; the streets are well paved and are lighted with gas and electricity; a new system of water-works costing about \$2,000,000 has been established; and there are several artesian wells, the latter supplying large quantities of mineral water. The fire dept. is well organized and there is an efficient police force. Among the principal buildings are the union depot, accommodating eight railroads, U. S. court-house, board of trade building, a hotel costing \$245,000, two opera-houses, the high-school building, the Rom. Cath. cathedral, and several churches. The manufactures are extensive and varied. In 1900 there were 871 establishments, employing \$27,971,613 capital and 8,022 persons, and yielding products worth \$48,871,596. Wagons, carriages, agricultural implements of various kinds, engines, electrical machines, and stoves are made; and there are flour-mills, starch factories, glucose works, breweries, and machine shops. Its splendid railway facilities and its water communication with the Great Lakes and the Gulf of Mexico make the city an important point of shipment for the vast quantities of grain grown in

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the surrounding country. There are several elevators with total storage capacity of more than 2,500,000 bushels. There are also large stock-yards and several packing-houses. In the wholesale trade a vast business is transacted, the agricultural implement dealers having 27 houses; leather and shoe findings, 3; lumber business, 11; grocery business, 7; paper, blank books, and stationery, 5; candy makers and dealers, 5; manufacturing chemists, 2; and wholesale druggists, 4. Other lines also are largely represented. Large quantities of bituminous coal are obtained in the immediate vicinity, and delivered in the city at only a slight advance on the cost of mining. The city is well drained; there are a number of parks, one of which has an area of 35 acres; the surroundings are pleasant; and the location, as indicated by the death-rate, is one of the most healthful in the country.—Very near the site of Peoria a trading post was established and a small fort built by La Salle 1680. In 1763 a company of French people settled a little above the present location of the city, but 1778 the settlement was moved about a mile down the river and became known as La Ville de Maillet, being named for its principal founder. On this site Fort Clark was erected by U. S. soldiers 1812. The fort was burned 1819, in which year the first American settlers arrived. The county of P. was organized 1825, the town was laid out the following year and, though the pop. was less than 100, articles of incorporation were secured 1831. In 1845 a city charter was obtained. Pop. (1870) 22,849; (1880) 29,259; (1890) 41,024; (1900) 56,100.

## PEORIA—PEPERINO.

PEO'RIA LAKE: expanded portion of the Illinois river, in the State of Ill., separating Woodford and Tazewell counties from Peoria county. Its length is about 20 m., and it ranges from  $\frac{1}{2}$  m. to  $2\frac{1}{2}$  m. in width. The city of Peoria (q. v.) is at the s. end of this lake.

PEPE, *pā'pā*, GABRIELE: 1781–1849; b. Bojano, in the present province of Molise, Italy. He took service in the Franco-Neapolitan army, was consequently exiled at the fall of the new govt.; served in the Italian legion in the French army under King Joseph in Spain with great distinction, and with Murat; received command of a province, and afterward of the garrison of Syracuse. He was a zealous adherent of the revolutionary party 1820; and at the downfall of the constitutional govt. he was seized by the Austrians, and imprisoned two years at Olmutz, in Moravia. Afterward a bitter controversy with Lamartine, then French chargé d'affaires in Tuscany, who had spoken slightly of Italian patriotism, resulted in a duel, followed by an apology from the poet. He died at Bojano.

PE'PE, GUGLIELMO: 1782–1855; b. Squillace; cousin of Gabriele P. After attaining high rank in the French army of Catalonia, he returned to Naples to support Murat. In 1818 he rooted out the nests of brigands who infested the provinces of Avellino and Foggia, and after the insurrection of 1820, was for some months the most influential man in Naples; but was defeated by the Austrians at Rieti, 1821, Mar. 7, and forced to flee to Spain. He lived many years in England, afterward removing to Paris. In 1848 he returned to Naples, welcomed with enthusiasm; and the king gave him command of the Neapolitan contingent against Austria. Disregarding his orders to return and put down the insurgents in Calabria, he turned with 2,000 men to the defense of Venice, of whose army he had been elected commander-in-chief; but all his courage and energy, with his small force, were in vain. Venice fell; P. fled and reached Paris. He died at Turin. He left several works, chief of which are, *Relation des Eevenements Politiques et Militaires de Naples en 1820 et 1821* (Paris 1822, in Italian and French), and *Histoire des Revolutions et des Guerres d'Italie en 1847, 1848, et 1849* (Paris 1850). A statue of him has been erected in Turin.

PEPERINO, n. *pěp-ě-rě'nō* [It. *peperino*—from *pepe*, pepper]: an Italian name for a light, porous, brown volcanic rock, formed by the cementing together of sand, scoriæ, cinders, etc., so called from the peppercorn-like fragments of which it is composed. It designates, in the usage of some geologists, the brown tuffs, derived from augitic rocks, in distinction from the ordinary tufas, which name they confine to the lighter-colored pumiceous rocks that have more trachyte in their composition.



## PEPIN

PEPIN, *pěp'ın*, F. *p.h-pǎng'* : name of several distinguished members of the Carolingian family (see CARLOVINGIANS).—The first was PEPIN LE VIEUX ('the Old') or PEPIN DE LANDEN; of Brabant origin; d. 639: he took his designation from Landen (now in Liège, Belgium). Rebelling with others of the great lords of Austrasia against the rule of Brunehaut, regent for the youthful king, he offered the crown to Clotaire II., King of Neustria, who, in reward of his services, created P. *maire du palais* of Austrasia, an office which he continued to hold during the two following reigns. His administration was directed to the preservation of the power and integrity of the Austrasian kingdom, and though, by opposing the various schemes of centralization proposed by the king, he fell under the royal displeasure, his conduct gained for him favor and influence with the Austrasian chiefs; his power and wealth were greatly increased, and a broad and firm path to political supremacy was laid for his descendants.—His son, GRIMOALD, who succeeded him as *maire du palais*, incautiously attempted to gather the fruits of his father's schemes before they were ripe, and suffered for his folly: both he and his son Childebert were strangled in prison (656) by order of Clovis II.

Pepin 'the Old' left by his daughter a grandson, PEPIN LE GROS or PEPIN D'HERISTAL (d. 714), who was elected by the Austrasian nobility as their chief, to protect Austrasia against the machinations of Elroin, the able *maire* of Neustria. His first step was to rid himself of the Merovingian king who nominally ruled over Austrasia; which was effected by obtaining the condemnation of the unfortunate monarch, Dagobert II., by a council of bishops, and then putting him to death. From this time the Merovingian rule in Austrasia ceased. P. was now sole ruler, but his ambition did not stop here; he had resolved on the ruin of the Merovingian monarchs, and accordingly levied a large army for the invasion of Neustria. Elroin, on his side, was equally resolved to humble the territorial aristocracy and support the throne; and advancing into Austrasia, his army came in sight of P.'s at Loixi. In the battle (680) which ensued, P.'s army was totally defeated, his brother and co-ruler, Martin, was taken prisoner and put to death, and he himself narrowly escaped. Elroin, however, was soon afterward assassinated, and his successor, Warato, signed a treaty of peace. The incapacity and tyranny of Warato and his successor, Berthaire, discontented the Neustrian nobles, who went over to P., and by this accession of power enabled him to resume the offensive. Neustria was immediately invaded, and a bloody but decisive battle at Testry (687) freed P. of his opponent Berthaire, who was left dead on the field, and placed Neustria at his feet. Showing moderation in the midst of triumph, and perceiving that he could not place on the throne a more obedient servant than Thierry III., then king of Neustria, P. caused him to be proclaimed king of

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Austrasia also, but reserved for himself the actual sovereign power, wielding the sceptre though declining the crown. From this time he ruled the whole of France (Austrasia in his own right by his election as Duke, and Neustria as *maire du palais*) with energy, and undisturbed by any internal commotion, during the lives of three other 'fainéant' kings, till his death. He had made several campaigns (689-708) against the Frisians, but that valiant and independent race was not thoroughly subdued for some time afterward. P. had two legitimate sons, who died before him, and an illegitimate son, Charles, subsequently known as Charles Martel (q.v.), who succeeded to his power.

The third who bore this name was PEPIN LE BREF, King of the Franks (d. 768, Sep.—reigned 752-768); younger son of Charles Martel. At the death of his father 741, he received Neustria and Burgundy; Austrasia, Thuringia, and Suabia being the heritage of his elder brother Carloman. Aquitaine was nominally a part of P.'s dominions, though, as it was really independent under its own duke, he made several attempts to subdue it; but the duke was able to hold his own against both P. on the one hand and the Arabs (from Spain) on the other. The farce of governing the country in the name and as the chief minister of the Merovingian sovereign was still kept up, though P. was eagerly longing for an opportunity to assume the crown; but the time was inopportune, as no sooner was the restraint of Charles Martel's iron hand removed by death, than revolts broke out in all quarters among the Franks, Germans, Bavarians, and Gascons. The country, by the united exertions of P. and Carloman, was restored to tranquillity about 745. Those princes who had excited the insurrection were mostly deposed and otherwise punished, and the Duke of Aquitaine was compelled to acknowledge at least the nominal sovereignty of Pepin. In 747 Carloman bade adieu to power, and retired into a convent, leaving his government to his sons, who were immediately dispossessed by Pepin. After crushing a rebellion of Saxons and Bavarians, P. began to carry out his favorite project of dispossessing the Merovingian dynasty of even the semblance of authority, and of originating in person a new royal dynasty. To gain his point, he flattered the clergy, then the most influential body in France; and as they had been despoiled by Charles Martel for the behoof of his warriors, a moderate degree of kindness and generosity on the part of P. contrasted him so favorably with his father that the clergy at once became his partizans. So did the pope, who, feeling the importance of securing the aid of the powerful Frankish chief against the Lombards, then masters of Italy, released the Franks from their oath of fidelity to Childeric, the Merovingian monarch. On learning this, P. at once caused himself to be elected king by the assembly of estates at Soissons, and was consecrated by the bp. of Mayence 752, March. Chil-

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deric retired to a convent, where he died 755. P. was the first Frankish monarch whose election received the sanction of the pope, and who was consecrated to his high dignity; and these solemn ceremonies put the crown to a great extent at the mercy of the clergy, who from this time took political rank in the state. The practice, too, followed by P. and his predecessors in office, of gaining partizans by granting particular fiefs to various chiefs, greatly strengthened the feudal system, and proportionally weakened the royal power. This effect, however, did not show itself till after the subsequent reign of Charlemagne, on account of the personal genius of these two rulers. P. was soon called to aid the pope against the Lombards, and, marching into Italy at the head of a large army, he compelled Astulf, Lombard king, to retire from the siege of Rome, and restore several cities which had previously belonged to the Greeks: these were now handed over to the pope. He had hardly returned to France when he was anew summoned (755) to Italy, the Lombards having broken their engagements. This time he took Ravenna, Emilia, the Pentapolis, and the duchy of Rome, from the Lombards, reuniting them to the Holy See. After the settlement of affairs in Italy, the turbulent nations on his e. frontier demanded his attention. The Saxons and other German tribes were defeated (757), their country cruelly ravaged, a heavy tribute exacted, and numbers of captives and hostages taken. Resolved to unite the whole of Gaul under his authority, he eagerly accepted the invitation of the Visigoths of Septimania to aid them against the Arabs who had taken possession of the country; and after a war of many years' duration, Narbonne, last of the Arab strongholds, was taken, and the country, freed of these invaders, at once acknowledged P.'s authority. The remaining years of his reign were occupied in reducing the independent monarchy of Aquitaine, which was not accomplished till, after nine years (760-768) of desolating warfare, P. obtained the assassination of his opponent, Duke Waifre, whose partizans then laid down their arms, surrendering to the Frankish monarch the vast provinces which stretch from the Loire to the ocean and the Pyrenees. Shortly after this conquest, P. died of dropsy. He was a most active, enterprising, and, in general, fortunate prince; he established the unity of the Gallic nation, and protected it, as far as could be done, by invading and ravaging the territories of the neighboring nations, though he also introduced elements of weakness into its constitution which deplorably reduced the authority of his successors.

## PEPIN—PEPPER.

PEPIN, *pěp'ĭn* or *pĭp'ĭn*, LAKE: expanded portion of the Mississippi river between the states of Wis. and Minn., separating Pierce and Pepin counties in Wis. from Goodhue and Wabasha counties in Minn. Its length is 27 m., and it varies from two to nearly three m. in width. It is in the midst of a beautiful and picturesque region. In some portions, the limestone bluffs which rise from a large portion of the shores reach a height of about 400 ft., giving an impressive scenery. The lake is a noted resort for fishermen, but is sometimes dangerous of navigation when strong winds sweep down between its steep banks.

PEPO, n. *pē'pō*, or PEPONIDA, n. *pěp'ōn-ĭ'dă* [L. *pepo*, a gourd—from Gr. *pepōn*, a kind of melon—from Gr. *pepōn*, ripe, mellow, as applied to fruit]: the fruit of the melon, cucumber, and other *Cucurbitaceæ*.

PEPPER, n. *pěp'pēr* [Gr. *peperi*; L. *piper*; It. *pevere*; F. *poivre*, pepper]: pungent spice, much used as a seasoning when ground to a powder; both the black and the white pepper of the shops are the product of *Piper nigrum*, ord. *Piperācēæ* (see below): V. to sprinkle with pepper; to pelt; to mangle or pierce with a number of missiles, as with shot. PEP'PERING, imp.: ADJ. hot; fiery; angry: N. a pelting with many shot or blows. PEP'PERED, pp. *-pērd*. PEP'PERY, a. *-pēr-ĭ*, hot; pungent; irascible. PEPPER BOX, a box for pepper. PEPPER-BRAND, a kind of mildew or blight that affects corn. PEPPER-CAKE, a kind of gingerbread. PEPPERCORN, the berry or fruit of the pepper-plant: hence (from its smallness), a thing of little value or importance. PEPPERCORN RENT, nominal rent. PEPPER DULSE, the *Lauren'cěă pinnatif'idă*, ord. *Algæ*, an edible sea-weed. PEPPERGRASS, or PEPPERWORTS, the ord. *Marsilēācēæ* or *Rhizō-car'pěæ*; popular names of some pungent-tasted plants, as the *Lepidĭum satĭvum*, or garden-cress, ord. *Crucif-ēræ* (see CRESS).

PEP'PER (*Piper*): genus of plants of nat. order *Piperaceæ* (q.v.), which genus formerly included the whole of that order; but, as now limited, consists of plants with woody stems, solitary spikes opposite to the leaves, and covered with flowers on all sides, the flowers mostly hermaphrodite. The most important species is COMMON P., or BLACK P. (*P. nigrum*), native of the E. Indies, now cultivated also in many tropical countries, and extensively in parts of America; its fruit being the most largely used of all species. It is a rambling and climbing shrub, with smooth and spongy stems, sometimes 12 ft. long, and broadly ovate, acuminate, leathery leaves. The fruit is about the size of a pea, of bright-red color when ripe, not crowded on the spike. In cultivation, the P.-plant is supported by poles, or by small trees planted for the purpose, as it requires a certain degree of shade; and different kinds of trees are often planted for this purpose in India. It is propagated by cuttings, comes into bearing in three or four years after

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it is planted, and yields two crops annually for about 12 years. When any of the 'berries' of a spike begin to change from green to red, all are gathered, as when more fully ripe they are less pungent, besides being apt to drop off. They are spread on mats and separated from the spikes by rubbing with the hands or by treading with the feet, after which they are cleaned by winnowing. The *Black P.* of commerce consists of the berries thus dried, which have become wrinkled and black; *White P.* is the seed freed from the skin and fleshy part of the fruit, to effect which the dried fruit is soaked in water and then rubbed. White P. thus prepared is of whitish-gray color, but frequently undergoes a bleaching by chlorine, which improves its appearance at the expense of its quality. Black P. is much more pungent than White P., the essential constituents of the spice being more abundant in the outer parts of the fruit than in the seed. P. depends for its properties chiefly on an acrid resin and an acrid volatile oil; it contains also a crystalline substance called *Piperin*.—The fruit of *Piper trioicum*, a species very similar to the Common P., is more pungent: it is cultivated in parts of India.—The fruit of other species of *Piperaceæ* is used as pepper in their native countries—that of *Cocobryon Capense* at the Cape of Good Hope; that of *Peltobryon longifolium*, of *Artanthe crocata*, of *A. trichostachya*, and of *Serronia jaborandi* in S. America.—*P. amethysticum*, or Ava pepper-shrub, is sometimes called *Long Pepper*: from it an intoxicating beverage is obtained, and its roots are narcotic. *Chavica Roxburghii* and *C. officinarum* yield the LONG PEPPER of druggists: they have woody climbing stems, solitary spikes opposite to the leaves, dioecious flowers, and the fruits so close together on the spikes as in ripening to become a compact mass. The spikes are gathered unripe, dried in the sun, and used in pickling and for culinary purposes, also in medicine for the same purposes as Common Pepper: they have been generally reputed more pungent than Common Pepper. *C. Roxburghii* is cultivated in Bengal and the Circars, where it is called *Pippul*; *C. officinarum* in the Dutch E. Indian colonies. The root and thickest part of the stem of *C. Roxburghii* are extensively used in India as a stimulant medicine; and are cut into small pieces, dried, and brought to the market under the name *pippula moola*.

P. acts on the skin as a rubefacient and vesicant, and is used for this purpose in a powdered state, moistened with some kind of alcoholic spirit. It is employed also as a local stimulant in relaxation of the uvula, and is applied in the form of ointment to ringworm. Taken into the stomach in minute quantities, it is a pleasant stimulant, but in large doses it produces great pain and irritation. The quantity used, however, by the natives of hot climates much exceeds anything known among Europeans, and the effects are evidently beneficial, rather than injurious. The chief use of P. is as a spice and condiment.

## PEPPERELL—PEPPER-ROOT.

P. was known to the ancients: Hippocrates employed it as a medicine; and Pliny expresses his surprise that it should have come into general use, considering its want of flavor. In the middle ages, P. was one of the most costly spices, and in the 13th c. a few pounds of it were reckoned a princely present. The quantity now exported to Europe and N. America is immense; but there are no means of exactly ascertaining how much of the P. of commerce is the product of *Piper nigrum*, or indeed of the *Piperaceæ*, and how much—though certainly it is not a large proportion of the whole—is the product of species of *Capsicum*.

The name P. is popularly given to substances possessing a pungency resembling that of P., though produced by very different plants. Thus, CAYENNE P. is the product of species of *Capsicum*, of nat. order *Solanaceæ*; JAMAICA P. (or PIMENTO), of species of *Eugenia*, of nat. order *Myrtaceæ*; and GUINEA P., or MELEGUETTA P., of species of nat. orders *Scitamineæ* and *Anonaceæ*. See CAPSICUM: PIMENTO: GRAINS OF PARADISE: GUINEA PEPPER.

PEPPERELL, *pěp'ěr-ĭl*, Sir WILLIAM: colonial general and governor: 1696, Jan. 27—1759, July 6; b. Kittery Point, Me., near the present boundary of N. H. His youth was passed in mercantile business. At about 30 yrs. of age he became member of council for the province of Mass., and continued in that office until he became gov., 1756–58. He was chief-justice of the court of common pleas 1730; led the expedition against Louisburg 1745; was made baronet; rose from col. to major-gen. 1755, and to lieut.gen. 1759. He was author of *Conference with the Penobscot Tribe* (1753); and his life, by Usher Parsons, was published 1855. His grandson, baronet, took the side of the king in the revolutionary war, and lost his estates by confiscation.

PEPPERIDGE, n. *pěp'pěr-ĭj* [corrupted from Sp. *berberis*; Ar. *berbaris*, the barberry]: the black-gum tree; the *Nyssa villosa*, ord. *Cornacææ* (see TUPELO). PEPPERIDGE-BUSH, the barberry; the *Berberis vulgāris*, ord. *Berberidacææ*: also spelled PIPERIDGE.

PEPPERMINT, n. *pěp'pěr-mĭnt* [*pepper*, and *mint*]: aromatic herb; the *Mentha piperitā*, ord. *Labiātæ* (see MINT): a cordial prepared from it. PEPPERMINT-TREE, a tree found in Australia. PEPPERMINT WATER, a mixture of the essence of peppermint with water.

PEP'PER-POT: West Indian dish of which Casareep (q.v.) is a principal ingredient; and with it flesh or dried fish, vegetables, chiefly the unripe pods of the okra (see HIBISCUS), and chillies (see CAPSICUM).

PEP'PER-ROOT (*Dentaria diphylla*): perennial herbaceous plant, of nat. order *Cruciferæ*, native of N. America, with pairs of ternate leaves and racemes of white flowers; the root of which has a pungent, mustard-like taste, and is used as a condiment.

## PEPPER-TREE—PEPYS.

PEP'PER-TREE : see SCHINUS.

PEPSIN, or PEPSINE, n. *pěp'sîn* [F. *pepsine*—from Gr. *pessō*, I digest; *pepsō*, I shall digest; *pepsis*, a digesting, a cooking]: peculiar nitrogenous substance, forming, with dilute hydrochloric acid, the active constituent of the gastric juice in animals generally. According to Schmidt's analysis, it contains 53.0 per cent. of carbon, 6.7 of hydrogen, 17.8 of nitrogen, and 22.5 of oxygen; hence in its ultimate composition is closely allied to albumen. As obtained from the walls of calves' or pigs' stomachs, it has been much used in recent medical practice, in the form either of powder or solution, for cases of disordered digestion from deficient or imperfect secretion of gastric juice, and in convalescence from typhoid and other debilitating fevers.

PEPTONE, n. *pěp'tōn*, a compound resulting from the action of pepsin, with diluted acid, on albuminous substances. PEPTONES, n. plu. bodies into which all albuminous substances, except amyloid, are changed by the action of acid gastric juice (see PROTEIDS: PROTEINE: DIGESTION). PEPTIC, a. *pěp'tik*, relating to or promoting digestion; dietetic. PEPTONIZE, v. to change into peptones.

PEPYS, *pěp'is* or *pěps*, SAMUEL: distinguished officer of the English admiralty during the reigns of Charles II. and James II.: 1632, 3, Feb. 23—1703, May 26; son of a London citizen, a tailor. He was well educated, first at St. Paul's School, afterward at Magdalene College, Cambridge. His cousin, Sir Edward Montagu (first Earl of Sandwich), introduced him to public employment. In 1660 he was appointed clerk of the acts of the navy, and 1673 sec. for the affairs of the navy. He was an excellent public servant, acute, diligent, honest, and laborious; but during the fanatical excitement of the Popish Plot he was committed to the Tower (1681), on an unfounded and absurd charge of aiding in the design to dethrone the king and extirpate the Protestant religion. Having been discharged without a trial, P. was replaced at his post in the admiralty, which he retained till the abdication of James II. For two years he held the honorable station of pres. of the Royal Soc. P. wrote *Memoirs of the Royal Navy*, 1690. He left to Magdalene College his large collection of books, MSS., and prints, including about 2,000 ancient English ballads, forming five folio volumes. This curious collection was begun, he says, by Selden, and continued till 1700, when the form peculiar to the old ballads—namely, the black-letter, with pictures—was laid aside for the simpler modern fashion. P.'s character was full of contradictions, and his morality in private life was exceedingly easy. He was no statesman, and no great scholar; but he was a faithful public official, and a truthful writer of the gossip of his times. Accordingly, he is now best remembered for his *Diary*, deciphered by the Rev. J.

## PEQUOTS—PERA.

Smith from the original shorthand MS. in the Pepysian Library, Cambridge, and published first under the editorial care of Lord Braybrooke 1825. It commences 1659,60, Jan. 1, and continues more than nine years, when the diarist was obliged from defective eyesight to abandon his daily task. As a picture of the court and times of Charles II., this *Diary* is invaluable; the events, characters, follies, vices—the brilliant wickedness of that reign—are presented in true and lively colors, and the work altogether is one of the most racy, unique, and amusing books in the language. Without this diary, we should be almost without any due understanding of the history of that period. Bright's edition (1875–80) is in 6 vols. See Wheatley's *P. and the World He Lived In* (1880).

PEQUOTS, *pē'kwōts*, or PEQUODS, *pē'kwōds*: tribe of N. Amer. Indians of the Algonquin family; they probably branched off from the Hudson-river Mohicans about the beginning of the 17th c. They were the dominant Indian tribe of Conn., and occupied a tract of about 500 sq. m., from the Niantic river to Wecapaug, R. I. In 1633 they sold to the Dutch the site of a fort on the Connecticut river, and the next year entered into a treaty at Boston and made peace with the Narragansetts, but soon afterward became hostile. Endicott and Gardiner led expeditions against them, and they in turn attacked Wethersfield, killing many settlers. Capt. Mason, with 90 white men and several hundred Mohicans, under their chief, Uncas, surprised the P. forts near Mystic, Conn., 1637. Their wigwams were burned, and many hundred men, women, and children perished. The remnant of the tribe continued the war until they were nearly annihilated in the Fairfield swamps. Their chief, Sassacus, was killed by the Mohawks, to whom he had gone for refuge. Many P. were sold as slaves to the W. Indies; but two bands eventually gathered, 1655, one near New London, the other on the Pawcatuck, for whom laws were made. They were located at Ledyard and n. Stonington 1667. In King Philip's War, and in operations against the French, they were allies of the settlers. The two bands numbered 44 in 1848. Some of them removed to N. Y. with the Brotherton Indians, and emigrated to Green Bay, Wis., where a few still remain.

PER, *pēr* [L.]: a prefix signifying through; thoroughly; by; for. PER becomes PEL before *l*, as in *pelucid*. PER standing alone signifies *by*. PER ANNUM [L. *annus*, a year]: yearly, or by the year. PER BEARER, by the bearer. PER CENT, *sēnt* [L. *centum*, a hundred]: for every hundred. PERCENTAGE, *-sēn'tāj*, rate by the hundred. PER DIEM, *dī'ēm* [L. *dies* or *dīēm*, a day]: by the day. PER HEAD, for each one of a certain number (see PER CAPITA, SUCCESSION, below). PER MAN, each man. PER SALTUM, *sāl'tūm* [L. *saltus*, a leap]: at a leap. PER SE, *sē* [L. *se*, himself]: by himself or itself.

PE'RA: a suburb of CONSTANTINOPLE (q.v.).



## PERAMBULATION OF PARISHES.

PERADVENTURE, ad. *pěr'ăd-věn'tūr* [L. *per*, through, and Eng. *adventure*: F. *par aventure*—*par*, by, for L. *per*, through, and *aventure*, chance]: by chance; perhaps.

PERAK, *pā-rāk'*: one of the largest Malay states in the peninsula of Malacca, extending about 90 m. along the Strait of Malacca, and about 45 m. inland; about 18,000 sq. m. The soil is fertile, and mostly covered with luxuriant vegetation. The mineral wealth is very great, and comprises abundance of tin, some gold and plumbago, and poor coal. Within recent years the expectation has been raised that P. would become the greatest tin-producing country in the world. Elephants, tigers, leopards, bears, and boars, and occasionally a rhinoceros, are found. P. is thinly inhabited by various races, of which the Malays are most numerous. Some of the others are of the same stock as the inhabitants of Sumatra: there are wild hill-tribes in the interior. Cannibalism is still practiced by some of these races. See M'Nair's *P. and the Malays* (1877). P. is governed by a sultan and petty chiefs, who have of late come under British influence, represented by a resident and his assistants. The murder of the British resident 1875 brought P. into evil fame. It is now practically a dependency of the Brit. crown colony of the Straits Settlements (q.v.). The cap. is Kinta; port, Port Weld. The revenue was reported (1889) about \$1,500,000. Pop. (1891) 212,997; (1901) 329,665.

PERAMBULATE, v. *pěr-ăm'bū-lăt* [L. *peram'bula'tus*, walked or rambled through—from *per*, through; *am'būlo*, I walk about]: to walk or pass through or over; to survey by passing through. PERAM'BULATING, imp. PERAM'BULATED, pp. PERAM'BULA'TION, n. *-lă'shŭn*, act of passing through or over; a travelling survey or inspection; annual survey of the bounds of a town, village, or parish (see below). PERAM'BULA'TOR, n. *-těr*, an instrument for measuring distances on roads; a child's carriage which an attendant pushes from behind. PERAM'BULATORY, a. *-lă-těr-ĭ*, rambling through or over.

PERAMBULA'TION OF PARISHES: ancient custom of Rogation week in England. It was designed to supplicate the Divine blessing on the fruits of the earth; and to preserve in all classes of the community a correct knowledge of, and due respect for, the bounds of parochial and individual property. It appears to have been derived from a still older custom among the ancient Romans, called Terminalia and Ambarvalia, festivals in honor of the god Terminus and the goddess Ceres. On its becoming a Christian custom, the heathen rites and ceremonies were discarded, and those of Christianity substituted. It was appointed to be observed on one of the Rogation (q.v.) days, the three days next before Ascension Day. Before the Reformation, parochial perambulations were conducted with great ceremony. The lord of the manor, with a large banner, priests in

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surplices and with crosses, and other persons with handbells, banners, and staves, followed by most of the parishioners, walked in procession round the parish, stopping at crosses, forming crosses on the ground, 'saying or singing gospels to the corn,' and allowing 'drinkings and good cheer' (Grindal's *Remains*, pp. 141, 241, and *Note*; Whitgift's *Works*, III. 266,7; Tindal's *Works*, III. 62, 234, Parker Society's edition); which proceedings were remarkable, as the Rogation days were appointed fasts. From the different practices observed on the occasion, the custom received the various names of *processioning*, *rogationing*, *perambulating*, and *ganging the boundaries*; and the week in which it was observed was called *Rogation week*; *Cross week*, because crosses were borne in the processions; and *Grass week*, because, the Rogation days being fasts, vegetables formed the chief diet.

At the Reformation, the ceremonies and practices deemed objectionable were abolished, and only 'the useful and harmless part of the custom retained.' Yet its observance was considered so desirable that a homily was prepared for the occasion; and injunctions were issued requiring that, for 'the perambulation of the circuits of the parishes, the people should once in the year, at the time accustomed, with the rector, vicar, or curate, and the substantial men of the parish, walk about the parishes, as they were accustomed, and, at their return to the church, make their common prayer. And the curate, in their said common perambulations, was at certain convenient places to admonish the people to give thanks to God (while beholding of his benefits), and for the increase and abundance of his fruits upon the face of the earth, with the saying of the 103d Psalm. At which time also the said minister was required to inculcate these or such like sentences, Cursed be he which translateth the bounds and doles of his neighbor; or such other order of prayers as should be lawfully appointed.' (Burn's *Ecclesiastical Law*, III. 61.)

To this day, questions of disputed boundary between parishes are invariably settled by the evidence afforded by these perambulations; for in such questions, immemorial custom is conclusive. And so far are they recognized in law, that the parishioners on such occasions are entitled to trespass on lands, and even to enter private houses if these stand on the boundary-line. In Scotland, where the parochial principle has never been developed as in England (see PARISH), there seem few traces of a similar practice. But, as between neighboring landowners, a breve of perambulation is the technical remedy for setting right a dispute as to boundaries or marches; and perambulating or 'riding' the bounds of boroughs is a common practice.

The necessity or determination to perambulate along the old track often occasioned curious incidents. If a canal had been cut through the boundary of a parish, it was deemed necessary that some of the parishioners

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should pass through the water. Where a river formed part of the boundary-line, the procession either passed along it in boats, or some of the party stripped and swam along it, or boys were thrown into it at customary places. If a house had been erected on the boundary-line, the procession claimed the right to pass through it. A house in Buckinghamshire, still standing, has an oven passing over the boundary-line. It was customary in the perambulations to put a boy into this recess, to preserve the integrity of the boundary-line. At various parts of the parish boundaries, two or three of the village boys were 'bumped'—that is, a certain part of the person was swung against a stone wall, a tree, a post, or any other hard object which happened to be near the parish boundary. This, it will scarcely be doubted, was an effectual method of recording the boundaries in the memory of these *battering-rams*, and of those who witnessed this curious mode of registration.

The custom of perambulating parishes continued in parts of the kingdom to a late period, but the religious portion of it was generally, if not universally, omitted. The custom has, however, of late years been revived in its integrity in many parishes.

PERAME'LES: see BANDICOOT.

PERBENDS, n. plu. *pèr'bëndz*, or PERBANDS, n. plu. *-bändz* [F. *parpaing*]: stones carried through the whole thickness of a wall: see PERPENDER.

PERCALE, n. *pèr'kāl* [F.]: cotton goods, printed or plain, and with a linen finish.

PERCALINE, n. *pèr-ka-lèn'* [F.]: fine French printed cotton goods.

PER CAPITA, *pèr kăp'ĩ-tâ*, SUCCESSION: coming of persons into the estate of a deceased person on the condition of share and share alike—i.e., when descendants take as individuals (*capita*), not by right of representation (*per stirpes*). When all the living descendants of an intestate are in the same degree of kinship to him, they take equal shares of his estate: but if some are in one degree (e.g., children) and others in another degree (e.g., grandchildren), the former take *per capita*; the latter take *per stirpes*, receiving as their shares so much of the estate as would have come to their representative or representatives in the nearer degree of kinship.

## PERCEIVE—PERCEPTION.

**PERCEIVE**, v. *pér-sēv'* [OF. *percever*; F. *percevoir*, to perceive—from L. *percipĕre*, to observe—from *per*, thoroughly; *capĭo*, I take]: to have the knowledge of external objects through the medium of the senses; to observe; to know; to understand; to discover. **PERCEIV'ING**, imp. **PERCEIVED'**, pp. *-sēvd'*. **PERCEIV'ER**, n. *-ér*, one who perceives. **PERCEIV'ABLE**, a. *-ā-bl*, that may be felt, seen, heard, or tasted; discernible by the mind. **PERCEIV'ABLY**, ad. *-bli*. **PERCEPTIBLE**, a. *pér-sĕp'ti-bl* [L. *perceptus*, observed, perceived: F. *perceptible*]: that may impress the senses; capable of being perceived. **PERCEP'TIBLY**, ad. *-tĭ-bli*. **PERCEP'TIBLENESS**, n. *-bl-nĕs*, or **PERCEP'TIBIL'ITY**, n. *-bĭl'ĭ-tĭ*, state or quality of being perceptible. **PERCEP'TION**, n. *-shŭn* [F.—L.]: the power, act, or state of receiving a knowledge of external things by impressions on the senses; idea; notion; conception (see below). **PERCEP'TIVE**, a. *-tĭv*, having the power of perceiving. **PERCEPTIVITY**, n. *pér-sĕp-tĭv'ĭ-tĭ*, the power of perception or thinking.—**SYN.** of 'perceive': to discern; distinguish; see; feel; apprehend; note; remark; behold.

**PERCEP'TION** [see **PERCEIVE**], in Philosophy: term referring to our reception of knowledge through the senses—an operation that to the common understanding seems simple enough, but whose philosophical consideration is attended with much difficulty. P., considered as a source of knowledge, refers exclusively to the outer or the object world—the world of extended matter and its properties. The names for the act of knowing one's own mind—the feelings and thoughts of the individual—are Self-consciousness and Self-introspection. The word 'Consciousness' is sometimes improperly limited to this signification. Locke used the term 'Reflection' for the same meaning, but this is ambiguous, and is now disused. All our knowledge is thus said (by those that deny innate ideas) to spring from two sources—Perception and Self-consciousness.

Two great disputes connect themselves with P., both raised into their full prominence in the philosophical world by Bp. Berkeley. The first is the origin of our judgments of the Distances and real Magnitudes of visible bodies. In opposition to the common opinion on this subject, Berkeley maintained that these were learned by experience, and not known by the mere act of vision: see **VISION**.

The second question relates to the grounds that we have for asserting the existence of an external and material world—which, in the view of Berkeley, was bound up with the other question. Inasmuch as P. is a mental act, and knowledge is something contained in a mind, what reason have we for believing in the existence of objects apart from our minds? or what is the mode of existence of the so-called external world?

The following sentences show in what manner Berkeley set forth the question: 'That neither our thoughts,

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nor passions, nor ideas, formed by the imagination, exist without the mind, is what everybody will allow; and it seems no less evident that the various sensations or ideas imprinted on the sense, however blended or combined together (i.e., whatever objects they compose), cannot exist otherwise than in a mind perceiving them. I think an intuitive knowledge may be obtained of this by any one that shall attend to what is meant by the term *exist* when applied to sensible things. The table on which I am writing, I say exists—i.e., I see and feel it; and if I were out of my study, I should say it existed, meaning thereby that if I was in my study I might perceive it, or that some other spirit actually does perceive it. There was an odor—i.e., it was smelled; there was a sound—that is to say, it was heard; a color or figure, and it was perceived by sight or touch. This is all I can understand by these and the like expressions. For as to what is said of the absolute existence of unthinking things, without any relation to their being perceived, that seems perfectly unintelligible. Their *esse* is *percipi*, nor is it possible they should have any existence out of the minds or thinking things which perceive them.'

This doctrine of Berkeley, amounting, it was said, to a denial of the existence of a material world (which is far from a correct view of it), was followed out by Hume, who, on similar reasoning, denied the existence of mind, and resolved the universe into a mere flow of ideas and impressions, without any subject to be impressed; acknowledging, nevertheless, that he felt himself unable, practically, to acquiesce in his own unanswerable arguments. There was obviously some great mistake in a mode of reasoning that brought about a dead-lock of this description; hence it has been the work of *metaphysical* philosophy since that time to endeavor to put the perception of the world on an admissible footing.

Dr. Reid reclaimed against Berkeley and Hume, by appealing to Common Sense, or Unreasoning Instinct, as a sufficient foundation for our belief in the existence of a world apart from our own minds. Sir W. Hamilton expounded the same view with greater clearness and precision. He considers that our consciousness tells us at once that in the act of perceiving there is both a *perceiving subject*—self, or the mind—and an *external reality*, in relation with sense, as the *object perceived*. 'Of the existence of both these things,' he says, 'I am convinced; because I am conscious of knowing each of them, not mediately in something else, *as represented*, but immediately in itself, *as existing*. Of their mutual dependence, I am no less convinced; because each is apprehended equally and at once, in the same indivisible energy, the one not preceding or determining, the other not following or determined; and because each is apprehended out of, and in direct contrast to, the other.'

—*Reid*, p. 747.

Much as Hamilton has labored to elucidate this doc-

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trine in all its bearings, it has not been generally accepted as satisfactory. Many believe that he has regarded as an ultimate fact of our constitution what admits of being still further resolved, and has mistaken an acquisition of the mature mind for a primitive or instinctive revelation.

Prof. Ferrier, in *Institutes of Metaphysics*, has gone through the question with extraordinary minuteness and elaboration. His main position is the inseparability of the subject and the object in P. (a position maintained also by Hamilton in the above extract), which is not reconcilable with the common assumption as to the independent existence of matter. Indeed, he reduces the received dogma of the existence of matter *per se* to a self-contradiction, and builds up a system in strict conformity with the correlation, or necessary connection, of the mind perceiving with the object perceived. He thus approaches nearer to Berkeley than to Hamilton or to Reid.

Those who would endeavor to show that our notion of the outer world is a complex fact and an acquisition, and not a simple apprehension of the uneducated mind, explain themselves to the following effect. It is in the exercise of *force* that we have to look for the peculiar feeling of the externality of sensible things, or the distinction that we make between what impresses from without, and impressions not recognized as outward. Any impression that rouses a stroke of energy within us, and that varies exactly and constantly as that energy varies, we call an outward impression. Dr. Johnson refuted Berkeley, as he thought, by kicking a stone. But in fact it was his own action with its consequences, and not the optical impression of a stone in the eye, that satisfied him as to the existence of something outward. The sum-total of all the occasions for putting forth active energy, or for conceiving this as possible to be put forth, is our external world.

We experience certain uniformly recurring sensations, and certain uniform changes in these, when we exert particular energies. Thus the visible picture of our dwelling is a permanent and habitual experience with us, and the variations of appearance to which it is subject correspond principally to our own conscious movements. As we move from one end of a room to another, we experience a change of the visible aspect at every step, and this regularly happens as often as we repeat the movement. But at times the experience exists in another shape, to which we give the name of memory or *idea*. We draw a marked distinction between these two modes of presentation, the actual and the ideal; and we assign a superiority to the one over the other. The superiority, we find, connects itself with the relation to our own movements: a mere idea or mental picture remains the same, whatever be our bodily position or bodily exertions; the sensation that we call the *actual* is entirely at the mercy of our movements, shifting in every

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possible way (but uniformly), according to the varieties of action that we go through. With a forward movement, the visible impression enlarges; with a backward movement, it diminishes. A certain movement of the eye shuts it out, another restores it. The raising of the head and the bending of the body are followed by an altered spectacle. We cannot but draw a broad distinction between the mental scenery that is thus shifted by all our movements, and the ideas and dreams that vary of themselves while we are still. To express the one fact, we use the terms externality, the material world, independent existence; to express the other, we employ the opposite language—internality, the world of mind, etc. Even if sensation were only in ourselves, we should still have to distinguish between present sensation and remembered or revived sensation; the reference of the one to our voluntary movements, and of the other to no such modifying causes, would oblige us to note a vital difference in the two classes of facts. Such is the uniformity of connection between certain appearances and certain movements, that we come to anticipate the one through the other. We know that in some one position, as when lying in bed, certain movements of the limbs and back will bring us to the sensation of a solid contact in the feet; that another series of movements will bring on a particular view to the sight; that a third movement will give the sound of a bell in the ear, and so forth. We cannot avoid regarding these various sensible effects, brought uniformly into play by a regular series of waking voluntary actions, as totally different from our ideas, recollections, and dreams.

As our belief in the externality of the causes of our sensations means that certain actions of ours will bring the sensations into play, or modify them in a known manner, this belief is readily furnished by experience, and is no more than our experience entitles us to entertain. When we have been repeatedly conscious that a tree becomes larger and larger to the eye in connection with a definite locomotion forward on our part; that this movement brings on at last a sensation of touch; that this sensation of touch varies with definite movements of the arms, and so on—the repetition of all this train of experience fixes it on the mind, so that from one thing alone, as from the distant vision of the tree, we can anticipate, or, as it is otherwise called, *perceive*, all the other consequences. We then know, without going through the steps, that the specified movements will bring about all the sensations above described, and we know nothing else; this knowledge, however, is to us the recognition of external existence, the actual fact that is meant when a material world is spoken of. Belief in external reality is the sure anticipation of certain sensations on the performance of certain movements; everything else said to be implied in it is but a convenient hypothesis for aiding the mind in holding together those multifarious connections that our experience has

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established in the mind. In order to account for the fact that the conscious movement of elevating the upper eyelid is followed with the sensation of light, to us and to other minds, we suppose a luminous agency always existing even when not affecting us or any other person; we cannot know or verify this supposition—it is a generalization founded upon particular experiences, and serving to sum up those experiences in a convenient form, but no such perennial independent substance can be absolutely proved.—See NOMINALISM.

PERCEVAL, *pér'sē-val*, The Right Hon. SPENCER: English prime minister: 1762, Nov. 1—1812, May 11; b. London; second son of John, Earl of Egmont. He was educated at Harrow, and at Trinity College, Cambridge; was called to the bar at Lincoln's Inn, and soon obtained repute as a diligent lawyer. Obtaining a seat in parliament for Northampton 1796, he was soon conspicuous for his extreme horror of popery, and his violent advocacy of the 'Protestant interest.' In the Addington administration, he was made solicitor-gen. 1801, and attorney-gen. 1802. In the Portland administration, 1807, he was made chancellor of the exchequer; and on the death of the Duke of Portland, 1809, P. became premier, uniting to his former office that of first lord of the treasury; which offices he retained till his death by assassination in the lobby of the house of commons. P. was killed by a pistol-shot from a man named Bellingham, a Liverpool broker, trading with Russia, who, having sustained some losses and injuries, which he had vainly applied to the govt. to redress, determined to avenge himself by taking the life of the prime minister. P.'s assassination shocked the public mind; but his death was rather a private than a public calamity. He was ready in debate, a placid and not ungraceful speaker, and led the house of commons with much tact; but he was superficial and intolerant. Sydney Smith, in his *Letters of Peter Plymley*, has given P. a kind of fame by his sarcasm. It was the fashion, when P.'s public policy was attacked, to laud his domestic virtues; and as to this, 'Peter' said that, if he had to choose between public and private virtues, he should prefer that Mr. P. 'owed for the veal of the preceding year, whipped his boys, and saved his country.'

PERCH, n. *pérch* [F. *perche*, a pole, a perch—from L. *perticā*, a pole or long staff: Sp. *percha*, a barber's sign-post]: a pole; a long staff; anything on which fowls roost or light: a measure of length of  $5\frac{1}{2}$  yds., or  $16\frac{1}{2}$  ft.—as a measure of area, the 40th part of a rood: V. to place or set upon, as a bird on a perch; to light or settle on; to sit or roost, as a bird. PERCHING, imp. PERCHED, pp. *pércht*. PERCHER, n. *pérch'ér*, one of an order of birds, the *perchers*, that perch or light on trees. PERCHED BLOCKS, in *geol.*, detached blocks of rocks which have been left by glaciers on the brows or ridges of hills or mountains.



## PERCH—PERCHE.

PERCH, n. *pérch* [F. *perche*—from L. *perca*; Gr. *perkē*, a perch—from Gr. *perknos*, dark-colored], (*Perca*): genus of acanthopterous fishes, of family *Percidæ*, to which it gives its name, and which includes many genera and a very great number of species both of marine and of fresh water fishes. The *Percidæ*, or P. family, have the body somewhat oblong and more or less compressed; the scales rather large; the bones of the gill-covers toothed or otherwise armed; the mouth without barbels; the *vomer* toothed, generally the palate also; there are sometimes two dorsals, sometimes only one. To this family belong not only the true perches, all of which are fresh-water fishes, but the Lates (q.v.) of the Nile, the Bass (q.v.) or Sea P., and their congeners, the Pike-perches (q.v.), the *Serrani*, and many other fishes. The true perches (*Perca*) have two dorsal fins, distinct and separate, the rays of the first spinous and those of the second flexible; the tongue is smooth; and the gill-covers are bony, notched, and sharply serrated. The COMMON P. (*P. fluviatilis*) is an inhabitant of the lakes, ponds, and still rivers of almost all parts of Europe; and the N. Amer. form (often called *P. flavescens*) cannot be positively separated from it as a species. It is of greenish-brown color, passing into golden yellow on the under parts, and marked on the back with six or seven indistinct blackish cross-bands. Its height is about one-third of its length, though there is much variety in its proportions. It often attains a length of 16 or 18 inches, and a weight of 2 or 3 lbs.; but perches have been taken of 8 lbs. weight or more. The P. loves still waters, and is easily reared in ponds; but it is not a desirable inmate of ponds intended for other fish, because it is very voracious, and devours their fry. It is readily caught by almost any kind of bait, and sometimes takes a small artificial fly. It is much esteemed for the table. It lives a long time out of the water if kept moist, and in some countries is thus brought to market, and carried back to the pond if not sold. The female P. deposits her eggs in long strings, united by a viscid matter.—A species (*P. Italica*) found in s. Europe differs from the Common P. in its shorter and deeper form, and lack of black bands.—A minute crustacean, known as the perch-pest, infests the mouth of the perch.

PERCHANCE, ad. *pér-chāns'* [L. *per*, for F. *par*, by, and Eng. *chance*]: by chance; perhaps.

PERCHE, LE, *lèh pèrsh*: portion of France, in early times belonging to the province of Maine, and lying s. of Normandy, with Mortagne for cap. In the 16th c. it became part of the kingdom of France. In the modern division of the country, it forms portions of Orne, Eure-et-Loir, and Eure departments.

## PERCHLORATE—PERCOLATE.

**PERCHLORATE**, n. *pér-klör'ät* [L. *per*, through: Gr. *chlōros*, green]: a compound of perchloric acid with a base. **PERCHLOR'IC ACID** ( $\text{HClO}_4$ ), colorless liquid, density 1.782 at 60°, not solidifying at  $-31^\circ$ ; obtained by distilling potassium perchlorate with sulphuric acid. Its vapor is transparent and colorless; in contact with moist air it produces dense white fumes. Perchloric acid, when cautiously mixed with a small quantity of water, solidifies to a crystalline mass—a compound of perchloric acid with one molecule of water:  $\text{HClO}_4 + \text{H}_2\text{O}$ . When brought into contact with carbon, ether, or other organic substances, perchloric acid explodes with great violence; hence it is a dangerous substance to handle.

**PERCIPIENT**, a. *pér-sĭp'ĩ-ěnt* [L. *percipien'tem*, observing—from *per*, through, and *capio*, I take]: having the faculty of perception; perceiving: N. one who perceives or has the faculty of perception.

**PERCIVAL**, *pér'sĭ-val*, JAMES GATES: geologist and poet: 1795, Sep. 15—1856, May 2; b. Berlin, Conn. In childhood he was remarkably precocious; at the age of 14 wrote a heroic poem; graduated at Yale 1815, at the head of his class; practiced medicine in Charleston, S. C.; became asst. surgeon in U. S. army, and for a time was prof. of chem. at the U. S. Milit. Acad. He settled in New Haven, Conn., 1827; studied geology; with Prof. Shepard, made geological survey of Conn. 1835; began survey of Wisconsin 1853. He could speak 10 languages, and was a musician, poet, botanist, and geologist. In his habits he was a recluse and somewhat eccentric. P. died at Hazel Green, Wis.—He published a vol. of poetry 1820; *Prometheus* and *Clio* (1822); *Poems* in 2 vols. (1826); translated *Malte Brun's Geography*, 3 large 4to vols. (1834); *Dream of a Day* (1843). A complete collection of his works, some of which are tragedies, was issued 1859. His report on the geol. of Conn. (1842) was a work of great learning and labor, and contained a study of trap formations, supporting a theory of fractures of the earth's crust. His *Life and Letters*, ed. by Julius H. Ward, was published 1866.

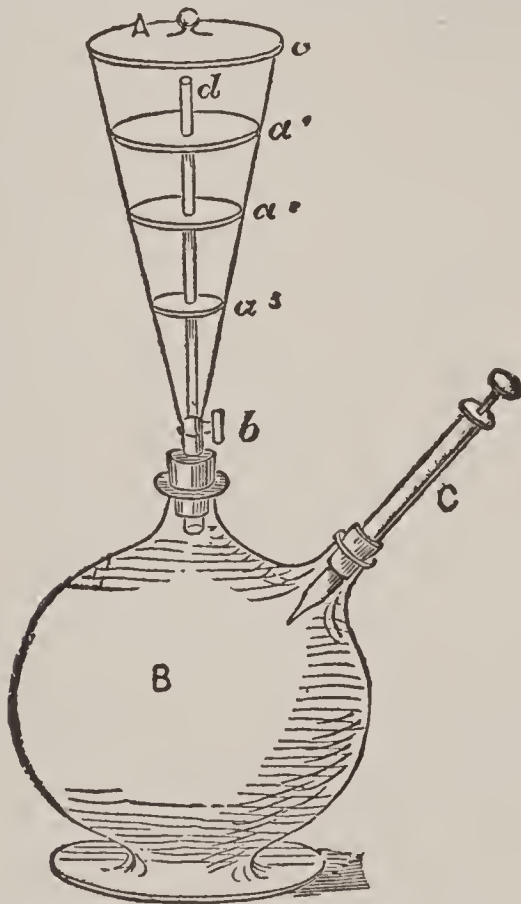
**PERCLOSE**, *pér'klōz* or *-klōs*: railing or other inclosure separating a tomb or chapel from the rest of a church. P., or **DEMI-GARTER**, in *her.*, is the lower half of the garter with the buckle.

**PERCOID**, a. *pér'koyd* [Gr. *perkē*, the perch; *eidōs*, resemblance (see **PERCH** 2)]: resembling the perch; pertaining to the **PER'COIDS**, or **PERCOIDÆ**, *pér-koy'dē*, the perch family.

**PERCOLATE**, v. *pér'kō-lāt* [L. *percolātus*, percolated—from *per*, through; *colo*, I strain—from *colum*, a filter]: to strain or filter through; to cause to pass through porous substances, or those not perfectly compact and solid. **PER'COLATING**, imp. **PER'COLATED**, pp. **PER'COLATOR**, n. *-lā-tér*, that which filters a liquid. **PER'COLA'TION**, n. *-lā'siǎn*, the act of passing a liquid through a

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medium, as through felt or a porous stone; purification by straining; a process much used in pharmacy, and in some other arts, for extracting certain soluble properties of various bodies by filtering a liquid through them. About 50 tinctures and extracts are properly prepared thus. As the fluid soaks in and passes through the material acted on, it displaces and carries with it the soluble parts; hence percolation is sometimes called the *Method of Displacement*. The forms of apparatus for percolation are very numerous, but the principle is the same in all—viz., a vessel with a porous bottom, and in the form of a truncated cone inverted, receives the material first, and over it is poured the water or other fluid which is to extract its virtues. One made by an eminent French pharmacien, M. Bejot, is very effective and complete. A is a long funnel-shaped glass, with a glass



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stop-cock (*b*) in the bottom, which narrows to an inch diameter; this fits into the neck of a large globular vessel *B*, both being adjusted by grinding. *C* is a syringe of brass fixed in the glass *B* as shown, and made air-tight by a caoutchouc washer.  $a^1$ ,  $a^2$ ,  $a^3$  are three diaphragms of porous felt, pierced by the tube *d*, which allows air-bubbles to escape from the bottom without disturbing the fluid. The material to be acted on, as wood, bark, root, leaves, etc., is first powdered, and is then laid on the top of the uppermost diaphragm,  $a^1$ , so as to half-fill the space between it and the glass-cover *c*; water, or any other required fluid, is then poured in until it is filled;

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the stop-cock *b* is opened, and the operator draws the air from the outer vessel by means of the air-pump *C*; the fluid is thus rapidly drawn through the material, and displaces its soluble parts.  $a^2$  and  $a^3$  arrest the fine solid particles which are carried through the first diaphragm with the liquid, and form sediments which also are acted on by the liquid, which is checked at each division for a time. The fluid, however dark-colored, when it reaches the globular glass is beautifully bright and clear, and the preparations so made are remarkable for good quality and uniformity of strength. Redwood's percolator (invented 1864) has great efficacy. It consists of a tinned copper cylinder, with a smaller cylinder of flannel inside, in which the materials are put. The whole is filled with the fluid menstruum, and as that which is in more immediate contact with the solid materials becomes charged with the soluble matter displaced, it gives rise, as its density is increased, to an endosmotic action through the flannel walls of the inner cylinder, until the whole is equalized, when it is drawn off by the tap, and fresh fluid added until it comes away colorless. The outer cylinder has a tight cover to prevent loss by evaporation.

PERCURRENT, a. *pér-kür'rënt* [L. *per*, through; *currens* or *curren'tem*, running—from *curro*, I run]: running through from top to bottom.

PERCUSS, v. *pér-küs'* [L. *percussus*, thrust or pierced through—from *per*, through; *quatërë*, to shake]: to strike forcibly; to strike in order to ascertain the resulting sound. PERCUS'SING, imp. PERCUSSED, pp. *-küst'*. PERCUSSION, n. *pér-küş'ün* [F.—L.]: act of striking one body against another; effect or impression of sound on the ear; impression one body makes on another by striking or falling upon it: act of striking or tapping on the chest, abdomen, etc., that sounds may be produced, by which the condition of the parts may be ascertained (see below). PERCUS'SIVE, a. *-küs'siv*, striking against. PERCUSSION-LOCK, gun-lock that acts by percussion. CENTRE OF PERCUSSION (see that title).

PERCUS'SION, in Medicine: method of eliciting sounds by tapping or gently striking the surface of the body; its object being to determine by the nature of the sound the comparative density of the subjacent parts. This means of diagnosis was employed first by Avenbrugger in the middle of the 18th c., and was afterward adopted by Corvisart in investigation of heart-diseases; but its value was not fully appreciated till Laennec made the diseases of the chest his peculiar study; and since his time, its application and various uses have been considerably extended by the labors of Piorry, Hughes Bennett, and other physicians.

P. is employed in the diagnosis chiefly of diseases of the lungs, heart, and abdominal organs. It may be *direct* (or, as some writers term it, *immediate*), or it may be *mediate*. In the former case, the part to be examined is struck with the ends of the three first fingers set close

## PERCUSSION CAPS.

together on the same level, or with a small mallet tipped with India-rubber; while in the latter, now almost universally adopted, a flat body is placed on the chest, or other part to be examined, and is then struck by the fingers or mallet. The flat intervening body is termed a *Pleximeter* [Gr. *plexis*, a blow; *metron*, a measure]. The instrument usually sold as a pleximeter is a flat, oval piece of ivory; but the left index or middle finger of the physician, with its flat surface fitted accurately to the part to be examined, serves equally well. The force of the stroke on the pleximeter—whether with use of the fingers or the mallet—must vary according as it is desired to elicit the sound from a superficial or a deep-seated part. The surface to be percussed should be exposed, or covered with, at most, only one layer of clothing; and the blow should fall perpendicularly on the pleximeter. When P. is made over a considerable cavity filled with air—e.g., the stomach or intestines—a hollow, drum-like, or (as it is usually termed by medical writers) *tympanitic* sound is produced. When any part of the surface of the chest is struck below which there is considerable depth of healthy lung-tissue consisting of small cells filled with air, a clear sound is evolved, less loud and hollow than the tympanitic sound, and termed the *pulmonary percussion-note*, depending partly on the vibrations of air in the lung-cells, and partly on the vibrations of the walls of the chest. When the subjacent substance is solid (as the heart, liver, or spleen) or fluid (e.g., when there is effusion into a closed sac), the sound is *dull* in proportion to the density and want of elasticity of the part struck. The first requisite to make P. useful in diagnosis of disease is accurate knowledge of the sounds elicited from the different parts in their normal condition. When, e.g., the healthy pulmonary P.-note is known, increased resonance of the walls of the chest will indicate dilatation of the air-cells (or Pulmonary Emphysema), while various degrees of dulness will indicate such morbid changes as the effusion of fluid into the pleura (Hydrothorax), or inflammatory solidification of the lung-tissue (the Hepatization in Pneumonia), or tubercular deposit. For the use of P. in diagnosis, see further: PERICARDITIS: PLEURISY.

PERCUS'ION CAPS: small copper cylinders, closed at one end, for conveniently holding the detonating powder exploded by a stroke from the trigger in percussion-arms. Caps were not used with the earliest percussion-arms, which the Rev. Mr. Forsyth of Aberdeenshire, Scotland, patented 1807; but they came into general use 1820–30, and were adopted for the Brit. army by 1840. With adoption of breech-loading arms, the use of *separate* caps has been discontinued: the cap now forms a part of the cartridge, and at one operation is placed with it in the open breech of the gun. The manufacture is extremely simple: A sheet of thin copper is

## PERCY.

stamped into pieces of appropriate shape, which are bent into the form of caps by stamping-apparatus closing round a mandril, the whole being done in one machine by two operations. The caps are then placed in a tray, mouths upward; and the inside of each is touched with strongly adhesive varnish. Over this is dusted the detonating powder, all the particles which fail to adhere being blown, dusted, or shaken out. A stamper again is forced into the cap, to fix and compress the powder, and the operation is completed. For muskets, the caps are charged with equal parts of fulminating mercury and chlorate of potash; for cannon, with a mixture of two parts of chlorate of potash, two parts of native sulphuret of antimony, and one of powdered glass; the last ingredient taking no part in the chemical action, and added merely to increase the friction. For the manner of using a P. C., see LOCK.

PERCY, *pér'si*, FAMILY OF: noble Norman family that accompanied William the Conqueror to England; and whose head, William de P., obtained from his sovereign 30 Knights' Fees in n. England. The representation of the house devolved (in the time of Henry I.) on Agnes, daughter of the 3d baron, who married Josceline of Louvain, brother-in-law of the king, only on condition that he adopted either the surname or the arms of P.; he chose to retain his paternal arms and to assume the P. name. His youngest son, Richard de P., was one of the chief barons who extorted Magna Charta from King John; and the 9th feudal lord, Henry de P. (in the time of Edward I.), showed a similar spirit, maintaining against the pope the spiritual independence of the English crown. This nobleman's great-grandson, a distinguished military commander under Edward III and acting as marshal of England at the coronation of Richard II., was created Earl of Northumberland. He subsequently, however, took up arms against Richard, and placed the crown on the head of Henry of Lancaster, who became Henry IV. Again dissatisfied with the government, he joined in rebellion with his son Hotspur (see Shakespeare's *Henry the Fourth*), for the purpose of transferring the crown to Mortimer, Earl of March. The earl, with the other leaders of this rebellion, fell at Bramham Moor (1407-8); and his titles became forfeited. These, however, were revived in favor of his grandson, who became lord high constable of England, and who was killed at the battle of St. Albans. This earl's son and successor (the third earl) met a like fate on Towton field, fighting in the van of the Lancastrian army. The 4th earl (who obtained a reversal of his father's attainder) was murdered by the populace in Northumberland, when ordered by the avarice of Henry VII. to enforce a subsidy. The executions of the 6th and 7th earls by Edward VI. and Elizabeth are part of the history of England. The 8th earl was committed to the Tower, on a charge of being concerned in a plot in favor

## PERCY.

of Mary, Queen of Scots, and died a violent death in prison. The 10th earl fought in the civil wars against Charles I.; though he took no part with the regicides, and eventually joined in the general effort to bring the Restoration. In 1670 the male line became extinct, 500 years after the marriage of Agnes de P. and Josceline of Louvain. The 11th earl left a daughter, an only child, who succeeded to the ancient barony of P., and marrying Charles, Duke of Somerset, became mother of Algernon, Duke of Somerset, who was created Earl of Northumberland, with remainder to his son-in-law, Sir Hugh Smithson, of Stanwick, county of York. Sir Hugh, succeeding to the earldom, assumed the name Percy; and obtained 1766 his advancement to the dukedom of Northumberland, to which title succeeded (1867) Algernon-George P., b. 1810. In the whole range of British history, no other family has been so continuously distinguished as that of P., in art, literature, and arms.

PER'CY, THOMAS, D.D.: poetical collector, antiquary, and scholar: 1729, Apr. 13—1811, Sep. 30; b. Bridgenorth, Shropshire, England. He was educated at Christ-Church, Oxford; and having entered the priesthood, rose to be bp. of Dromore, Ireland, 1782. This amiable and accomplished prelate, friend of Johnson, Goldsmith, and other distinguished contemporaries, published translations from the Icelandic, a new version of the *Song of Solomon*, the *Northumberland Household Book*, a translation of Mallet's *Northern Antiquities*, etc. His most popular and valuable contribution to literature was *Reliques of Ancient French Poetry* (1765), consisting of old heroic ballads and songs, with some modern imitations, in which the editor himself displayed the taste and feeling of a poet. P. lived to see four editions of it, and to receive the warm commendations of all poetical readers and critics. The *Reliques* were obtained chiefly from an old folio MS. that had fallen into P.'s hands, with the addition of pieces from the Pepys collection at Cambridge, the Ashmole Library at Oxford, the British Museum, and the works of the earlier English poets. Certain liberties were taken with some of the ballads—softening touches, repairs, and renovations—for which the editor was severely censured by Ritson and other antiquaries; but this point was generally deemed of only minor importance; and the collection was accepted with delight as of great value to English literature, recalling the public taste to the rude energy, picturesqueness, and passion of the old chivalrous minstrels and Elizabethan songsters. It captivated the youthful imagination of Walter Scott, and was the inspirer and model of his *Minstrelsy of the Scottish Border*. The memory of P. has been further perpetuated by a club book assoc., called the PERCY SOCIETY.

## PERDICCAS—PEREGRINATE.

**PERDICCAS**, *pěr-dik'as*: Macedonian general under Alexander the Great, after whose death, B.C. 323, he was regent of the empire till his own death, B.C. 321; son of Orontes. He led a portion of the troops in many of the great battles in which Alexander secured his conquests. When on his death-bed, Alexander gave P. his signet-ring, which was regarded as an appointment as his successor. Consequently P. endeavored to exercise royal authority, and for a time succeeded in controlling the govt. and the army. A party led by Antigonus, Antipater, and Ptolemy conspired against him, and while on an expedition against Ptolemy, B.C. 321, he was assassinated by a party of his own soldiers.

**PERDIDO**, *pěr-dē'do*: bay and river of Ala. The bay, 20 m. long, 6 to 10 m. wide, opens by a narrow channel into the Gulf of Mexico, 18 m. w. of the entrance to Pensacola Bay. The river rises in s.w. Ala.; and bay and river form the boundary between Ala. and Florida.

**PERDIE**, or **PERDY**, ad. *pěr-dē'* [OF. *pardi*, a common vulgar oath—from F. *par*, by; *Dieu*, God]: in *OE.*, by God; certainly; verily; in truth.

**PERDITION**, n. *pěr-dish'ūn* [F. *perdition*—from mid. L. *perditōnem*, perdition—from L. *perditus*, ruined, undone]: state of being utterly lost or ruined; misery in a future state.

**PERDU**, a., or **PERDUE**, a. *pěr-dū'* [F. *perdu*, lost, undone—from *perdre*, to lose]: forlorn; lost, as one employed on desperate enterprises; accustomed to desperate purposes: N. one lying in ambush: AD. close; in ambush; in a post of danger. **LYING PERDU**, lying in concealment or ambush.

**PERDURABLE**, a. *pěr'dū-rā-bl* [OF. *perdurable*, firm, lasting—from L. *per*, through; *durāre*, to last]: in *OE.*, long-continued; lasting; everlasting. **PERDURABLY**, ad. *pěr'dū-rā-bli*, lastingly; enduringly.

**PEREA**, or **PERÆA**, *pē-rē'a*: lower portion of e. Palestine; well-watered and fertile region belonging anciently to the tribes of Reuben and Gad. Its boundaries, according to Josephus, were Pella on the n., Philadelphia on the e., and Herod's castle Machærus on the s. The ministries of John Baptist and the Lord Jesus were partly in this district.

**PERE DUCHESNÉ**: see **HÉBERT**, **JACQUES RENE**.

**PEREGRINATE**, v. *pěr'ě-grĭn-āt* [L. *pěrēgrinātus*, having roamed or wandered about—from *pěrēgrĭnus*, foreign: It. *peregrinare*; OF. *pěrēgrĭner*, to travel through foreign parts]: to wander from place to place, or from one country to another. **PER'EGRINATING**, imp. **PER'EGRINATED**, pp. *-ā-tēd*. **PER'EGRINATOR**, n. *-ā-tēr*, one who travels to foreign countries. **PER'EGRINA'TION**, n. *-ā-shŭn* [F.—L.]: a wandering in foreign countries or living abroad; a wandering.



## PEREGRINE FALCON.

PEREGRINE FALCON, *pěr'ě-grĭn faw'kn* [see PEREGRINATE], (*Falco peregrinus*): species of Falcon (q.v.) found in almost all parts of the world. The female is larger than the male, being about 18 in. long from tip of bill to tip of tail, while the male is only about 15 inches. The female is the *Falcon* of falconers, and the male the *Tercel*. The plumage of the two sexes is very similar. The back, wings, and tail are bluish-slate or ash-gray, the feathers barred with a darker tint; the crown of the head, back of the neck, and a spot below the eye, nearly black; the front of the neck is white, with dark longitudinal lines; the breast, belly, and plumage of the legs, whitish, with dark-brown transverse bars. The wings are very long, reaching almost to the tip of the tail; and the bird is remarkable for power of flight, being capable of maintaining for a considerable time a rate of more than 100 m. an hour, so that it is often seen far from any of its haunts or breeding-places; whence the name Peregrine, from the Latin *peregrinus*, a wanderer. Its swoop, when rushing on its quarry, is wonderful for rapidity and force. The P. F. can easily carry through the air a bird or quadruped fully its own weight. Its ordinary prey consists of grouse, woodcocks, rabbits, etc. The woodcock in vain seeks to escape from it by threading its way among branches of trees and brushwood; the falcon follows, and exhibits at least an equal power of moving with great rapidity in the thicket without getting entangled or stayed. Sometimes the quarry soars into the air, and seeks safety by trying to keep above the falcon, till both are lost to ordinary sight; but the falcon generally gets uppermost, and 'strikes' it at last. It has thus been known to cut a snipe in two, and at one swoop to strike off the head of a grouse or pigeon. Owing to the quantity of game the P. F. will capture, it is ruthlessly trapped or otherwise destroyed, so that this beautiful bird is in danger, like others of its family, of being exterminated. The P. F. is a bird as remarkable for boldness as for power of flight. It has sometimes been seen to pounce on game shot by a sportsman before it could fall to the ground; and an instance has occurred of a P. F. dashing through the glass of an aviary in a town, and carrying off a bird. It makes its nest on ledges of high rocks, either on the sea-coast or in inland precipices and ravines, and lays two to four eggs. Numerous localities have long been noted as breeding-places of the P. F.; and some of them in Britain are regularly visited for the young birds, which are still trained in certain places for the sport of falconry. The bird caught when adult, though then more difficult to train, is believed to possess superior qualities. The P. F. is more docile and becomes more gentle than the Gyr Falcon. The young female of the P. F. has been by mistake described by Pennant and others under the name of the Lanner (q.v.), a species not found in Britain.—See FALCONRY.

## PEREIRA—PÉREIRE.

PEREIRA, *pē-rē'ra* or *pā-rū'ra*, JONATHAN: pharmacologist: 1804, May 22—1853, Jan. 20; b. in the parish of Shoreditch, London. He studied medicine; and 1823 was appointed resident medical officer of the gen. dispensary in Aldersgate street; afterward lecturer on chemistry. In 1824 he published a translation of the *London Pharmacopœia*; followed by *A Manual for the Use of Students; A General Table of Atomic Numbers, with an Introduction to the Atomic Theory*; and other text-books. In 1832 he resigned the office of lecturer for that of prof. of materia medica in the New Medical School in Aldersgate street, and succeeded Dr. Gordon as lecturer on chemistry at the London Hospital. His great work, *Elements of Materia Medica*, appeared as a separate work 1839-40, and at once established his reputation. The treatise is remarkable for research, variety of scientific, commercial, and practical information, and scrupulous exactness. In 1841 he procured the license to practice in London from the College of Physicians; 1845 he was elected a fellow of that body; and on the establishment of the London Univ., he was appointed examiner in materia medica and pharmacy. Among his contributions to science, his excellent treatises on *Diet* and on *Polarized Light* (1843) are best known. His death was the result of a fall.

PÉREIRE, *pā-rār'*, ÉMILE and ISAAC: brothers, French financiers: Émile 1800, Dec. 3—1875, Jan.; Isaac 1806, March 25—1888, July 12; both b. in Bordeaux. They were Israelites; their grandfather, Jacob Rodriguez P., b. in Spain, was founder of the first deaf-mute institution in France. Émile came to Paris 1822 (Isaac 1823); became a stock-broker, soon impressing the leading financiers by his intelligence and the boldness of his ideas, which he had imbibed chiefly from the school of St. Simon. After the revolution of 1830, he separated himself from the St. Simonians and their organ, the *Globe*, and co-operated with the *National*, republican. At this time, he conceived the plan of a bank to protect commerce against commercial crises; and, with his brother, obtained capital from the Rothschilds and others, built the St. Germain railway, and the Northern, and the Southern to Lyons, with lateral canal. Émile is represented as the head, and Isaac the arm, in all their enterprises. They founded the *Crédit Mobilier* (q.v.) 1852, a stock-company for general banking and construction, absorbing or supplanting legitimate corporations, and reaping their profits, with 60 million francs capital in 500-francs shares; its dividends ranged from 5 to 41 per cent., averaging 17, until the shares tumbled from the quotation 1,982 francs in 1856 to 140 francs in 1867. But it gave an immense impetus to improvements as well as to feverish speculation during the second empire, though at the expense of people of small fortunes; it transformed Paris, and even furnished means for the Crimean and Italian wars. A *crédit immobilier*, known as the *Compagnie Rue de Rivoli* (*immobilier*, real estate),

PEREJASSLAVL—PERENCHYMA.

which built the Hotel du Louvre, gave the last blow to the *Crédit Mobilier*. Before and after Émile's death, the principal actors in the schemes were compelled by the courts to disgorge largely. Émile was a connoisseur of art, and led in collecting for exhibition the works of Delaroche. Isaac published some *brochures*—e.g., *Bank of France and the Origin of Credit in France* (1864); *Principles of the Constitution of the Bank, and Origin of Credit* (1865); *Reform of Imposts* (1877); *The Religious Question* (1879); *The Conversion of the Sinking Fund* (1879); *The Question of the Railways* (1879). He instituted, 1880, a competitive prize of 100,000 francs, to be divided among successful writers on four subjects: the extinction of pauperism; a better system of public instruction, with reference to obtaining degrees; the organization of credit, for better development of labor; and reform of taxes. Dumas presided at the examination of 600 memoirs sent in; and M. Hippeau alone obtained a first prize.

PEREJASSLAVL, *pā-rā-yas-slâvl'*: ancient town of Russia, in the w. of the govt. of Poltava. Pop. (1880) 9,500.

PEREKOP, *pā-rā-köp'*, ISTHMUS OF: neck of land in s. Russia, govt. of Taurida; 18 m. long, 16 m. broad at its s., and 5 m. broad at its n., extremity; connecting the peninsula of the Crimea with the mainland of European Russia. It is an arid waste of mere sand, or sand and clay. There are numerous salt-lakes, and salt has been extensively made. In the n. of the isthmus, and forming the key to the Crimea, is the small town of P., which has little commercial importance. Pop. of town 4,993.

PÈRE-LA-CHAISE: see LACHAISE.

PEREMPTORY, a. *pēr'ëmp-tër-î* [F. *péremptoire*, decisive—from L. *peremptōrius*, destructive, deadly; *peremptus*, extinguished, destroyed]: in a manner to preclude debate or remonstrance; positive; final; absolute. PER'EMPTORILY, ad. *-tër-î-lî*. PER'EMPTORINESS, n. *-î-nēs*, the quality of being peremptory; absolute decision.—SYN. of 'peremptory': express; decisive; dogmatical; arbitrary; authoritative.

PER'EMPTORY DEFENSES, in Scotch Law: defenses to an action or suit, which amount to an entire negative of the right of action, as distinguished from a preliminary or temporary defense.

PERENCHYMA, n. *pēr-ëng'kî-mă* [Gr. *pēra*, a pouch; *eng'chuma*, what is poured in, an infusion; *cheuma*, a stream—from *cheō*, I pour]: in *bot.* cellular tissue containing starchy matter.

## PERENNIAL—PEREZ.

PERENNIAL, n. *pěr-ě'n'ň-ăl* [L. *peren'nis*, everlasting—from *per*, through; *annus*, a year: It. *perenne*]: in *botany*, a plant whose leaves generally perish annually, but whose root and stem survive more than two years: the term is applied in distinction from Annual (q.v.) and Biennial (q.v.). Some plants, however, which are annual in cold climates, are perennial in warmer regions. The term is in general applied only to herbaceous plants, and indicates a property only of their roots, the stems of most of them dying at the end of each summer. Perennial herbaceous plants, like shrubs and trees, are capable of producing flowers and fruit time after time, in which they differ from annual and biennial plants, which are fruitful only once. Those plants capable of being propagated by cloves, offset bulbs, or tubers, all are perennial, e.g., the potato, though the crop is planted in spring and reaped in autumn, like that of corn, while all the corn plants are annuals.—There is great diversity in the duration of life of perennial plants. PERENNIAL, a. lasting through the year; flowering for several years; perpetual; unceasing. PERENNIALY, ad. *-lĭ*.—SYN. of 'perennial, a.': continual; unceasing; perpetual; unailing; constant; ceaseless; permanent; enduring; uninterrupted; lasting; continuing.

PERENNIBRANCHIATA, n. plu. *pěr-ě'n'ň-bräng'kĭ-ătă* [L. *peren'nis*, everlasting; Gr. *brang'chĭă*, gills]: those amphibia in which the gills are permanently retained throughout life. PERENNIBRANCHIATE, a. *-bräng'kĭ-ăt*, having the gills remaining throughout life, as in the case of certain amphibians.

PEREYASLAVL, or PERESLAVL ZALYESSKII ('P. beyond the Forest,' in distinction from an older P. in Poltava): district town in the middle of Great Russia, govt. of Vladimir, 70 m. n.w. of the city of Vladimir; founded 1052 by George, Prince of Soudal. It possesses numerous churches and religious institutions; but is noteworthy for its factories, of which the most important are cotton-mills and print-works for cotton goods. The factories are increasingly prosperous. The cotton manufactures of P. are exported to the fairs of Nijni-Novgorod and Irbit, and even to China by way of Siberia. The people are employed in the factories and in the productive fishery of Lake Pleshtcheieff. Pop. (1880) 7,200.

PEREZ, *pě'rěz*, Sp. *pă'rěth*, ANTONIO: minister of Philip II. of Spain: about 1540–1611; b. Aragon. His father was secretary of state under Charles I. and Philip II., and P. was appointed to this office when only 25 years of age, and acquired the entire confidence of the king. Don Juan d'Austria, having sent his confidant, Juan de Escovedo, to Spain, to solicit aid against the party of Orange, and Escovedo having rendered himself an object of hatred both to the king and to P., the king resolved to put him out of the way by murder, and in-

## PERFECT.

trusted P. with the accomplishment of this design, which P., to gratify his own revenge, accomplished accordingly, 1578, Mar. 31. The family of Escovedo denounced P. as the murderer, and all his enemies joined against him. The king at first sought to shield him; but 1581, July, he was arrested, and by torture forced to confess. He escaped to Aragon, where he put himself under protection of its laws. After long and severe inquiry into his conduct, he was found guilty of many acts of fraud and corruption, and condemned to death in Madrid; but the *Justicia Major*, or highest court of justice in Saragossa, refused to deliver him up. The king applied for aid 1591, May, to the Inquisition, and the Aragonese court delivered him to its agents, but the people rose in tumult, and liberated him. This happened repeatedly; and at last, 1591, Sep., Philip II. entered Aragon with an army powerful enough to subdue all opposition, abolished the old constitutional privileges of the country, and caused a number of the principal people to be put to death. P., however, made his escape, avoiding the many plots which the king laid for his assassination. He was condemned in Spain as a heretic, but was treated with kindness in Paris and London. He spent the latter years of his life in Paris, and died there in great poverty. P. wrote an account of his misfortunes, *Relaciones*, pub. Paris 1598.

PERFECT, a. *pér'fěkt* [L. *perfectus*, rendered perfect, completed—from *per*, thoroughly; *facio*, I make: It. *perfetto*; OF. *parfit*, *parfait*; F. *parfait*, perfect]: complete throughout; not defective or blemished; having all that is requisite to its nature and kind; completely skilled or informed; not liable to err; pure; blameless; in *gram.*, applied to the tense of a verb which signifies an action done in past time, but connected by its continuance or effects with the present; in *OE.*, confident; certain: V. to complete; to finish thoroughly; to raise to a perfect state; to instruct fully; to make wholly skilful. PER'FECTING, imp.: N. the rendering or making perfect; in *printing*, the taking of the impression from the second form of a sheet. PER'FECTED, pp. PER'FECTER, n. *-ér*, one who makes perfect. PERFECTIBLE, a. *pér-fěkt'í-bl* [F.—L.]: capable of being made perfect. PERFECTIBILITY, n. *-bíl'í-tí*, capacity of becoming or being made perfect (see PERFECTIBILITY OF CHRISTIANS). PERFECTIBILIST, n. *pér-fěk-tíb'íl-íst*, in *chh. hist.*, generic designation for any Christians holding the doctrine that perfection is attainable in this life. PERFEC'TION, n. *-fěk'shŭn* [F.—L.]: the state of being perfect; a quality, endowment, or acquirement tending to complete excellence, or to great worth. PERFEC'TIONAL, a. *-ăl*, made complete. PERFEC'TIONIST, n. *-íst*, a Christian who believes that some attain to moral perfection on this earth: also, in a widely different sense, a member of a community or assoc. holding an immoral theory which denies the force of moral rules as applicable to 'the perfect' (see PERFECTIONISTS, or BIBLE COM-

## PERFECTIBILITY OF CHRISTIANS.

MUNISTS). PERFECT'IONISM, n. -izm, doctrine that moral perfection is or can be attained on this earth (see below). PERFECT'IVE, a. -fěkt'iv, conducing to perfection. PERFECT'IVELY, ad. -lĭ, in a manner conducive to perfection. PERFECTLY, ad. pěr'fěkt-lĭ, in a perfect manner; wholly; completely; exactly. PER'FECTNESS, n. -nės, the state or quality of being perfect; completeness; consummate excellence. PERFECT CADENCE, in *music*, a complete and agreeable close in the harmony. PERFECT CHORD, in *music*, a concord or union of sounds perfect and agreeable to the ear. PERFECT NUMBER, in *arith.*, a number equal to the sum of all its divisions. TO PERFECTION, in the highest degree of excellence. *Note.*—The OE. of PERFECT is *parfit* and *perfite*, but the word was eventually conformed to the L. spelling.—SYN. of 'perfect, a.': finished; entire; complete; consummate; clear; immaculate; faultless; unblemished; full; accomplished.

PERFECTIBILITY OF CHRISTIANS: doctrine held by the Wesleyan Methodists (see METHODISTS) of a *Christian perfection* attainable in this life. It is a perfection not of *justification*, but of *sanctification*; which John Wesley, in a sermon on Christian Perfection, from the text Heb. vi. 1, 'Let us go on to perfection,' earnestly contends for as attainable in this life by believers, by arguments founded chiefly on the commandments and promises of Scripture concerning sanctification; guarding his doctrine, however, by saying that it is neither an *angelic* nor an *Adamic* perfection, and does not exclude ignorance and error of judgment, with consequent wrong affections, such as 'needless fear or ill-grounded hope, unreasonable love, or unreasonable aversion.' He admits, also, that even in this sense it is a rare attainment, but asserts that 'several persons have enjoyed this blessing, without interruption, for many years, several enjoy it at this day, and not a few have enjoyed it unto their death, as they have declared with their latest breath, calmly witnessing that God had saved them from all sin, till their spirit returned to God.' Concerning all which, the general belief of Prot. Christians is, that these persons were merely more self-complacent and less sensible of their own corruptions than is usual, and that the commands and promises concerning sanctification are not inconsistent with the fact of a remaining though gradually decreasing defect of righteousness in Christian disciples, and a need of further sanctification, or with a continued going on unto perfection while this life endures.

That perfection is attainable in this life is held by the Franciscans, Jesuits, and Molinists in the Church of Rome, but denied by the Dominicans and Jansenists; and its supporters generally lay stress on the distinction between mortal and venial sins.

## PERFECTIONISM—PERFECTIONISTS.

**PERFECTIONISM**, *pér-fĕk'shŭn-izm*, in **Christian Theology**: doctrine of the attainment of a sinless state in this life. It has been held in various senses, or variously qualified, in different religious communions. By Rom. Catholics it has been taught that in some cases by special grace there may be perfect obedience; in effect, the doctrine is even exceeded by that of overbalancing merits; on the direct question, however, there have been disagreeing parties in the Rom. Cath. Chh. By the Soc. of Friends it is held that one may come 'to be free from actual sinning;' yet 'this perfection still admits of growth' and 'a possibility of sinning.' By John Wesley it was spoken of as from the grace of God, resulting in freedom 'from all unholy tempers, self-will, pride, anger, sinful thoughts;' at its highest, 'it does not exclude ignorance and error and a thousand infirmities;' it is the sanctified heart fulfilling the law by love. By the Oberlin school, as represented by Finney, it all hinges on the nature of sin as only a matter of present will, which must at any moment be either wholly toward obedience or wholly away from it, from the first hour of the Christian life; yet even this view is modified in the followers of this school by the additional idea of a remarkable higher experience in which the promises of God are embraced with a full faith not reached in a common lower experience. By the Oneida communists, as by many antinomians in all ages, the doctrine was travestied and made abominable by the assertion that, in the fulness of the dispensation of Christ, all law is abrogated—hence there can be no sin; the Christian is, under Divine guidance and can do as he pleases. It is evident how far is such a view from the speculative theories on perfection which have been held by some of the purest of men.—By all students of the N. Test. it is well known that 'perfect' is used in many senses, such as sincere, or well instructed. Passages that might seem to teach the attainment of a sinless state must be interpreted by the drift of the context and of the whole gospel. By the majority of theologians, sanctification is held to be progressive. In botany, a flower is technically 'perfect' when it has the essential organs, though far from 'complete,' lacking much and even deformed. See **PERFECTIBILITY OF CHRISTIANS**.

**PERFECTIONISTS**, or **BIBLE COMMUNISTS**, popularly known as **FREE-LOVERS** or preachers of Free Love: small American sect, remarkable for their doctrines, abhorrent to the general moral sense, and for the unfaltering way in which they carry them out in practice. The founder of the sect, John Humphrey Noyes (1811, Sep. 11—1886, Apr. 13), was born in Brattleborough, Vt. After practicing law, he studied theology at Andover and Yale, and became a Congregational preacher. He soon adopted new views, and was called to account for them and deprived of his license to preach. The opinions of the apostle Paul, he held, had been completely misconceived by all Christian churches; all our ecclesiastical or,

## PERFECTIONISTS.

ganizations are accordingly blunders; there had been no visible church of Christ on earth since the apostolic age to his day. He believed that Christ, on his second advent 'in the spirit,' A.D. 70, abolished the old Law, and closed the reign of sin which began with Adam; and that he has thenceforth set up his kingdom in the hearts of all willing to accept his reign. For such persons, there was no longer any law or rule of duty; neither the Mosaic code, nor the Sermon on the Mount, nor the ordinances or institutions of civil society, were binding on them; they were a law unto themselves; they were free to do as they pleased, but—with exceptions which, however, could not invalidate an eternal truth—under the influence of the Divine Spirit, which dwelt in them, they could do only that which was right: they were *perfect*—hence their name.

He and his converts, men and women with their children, established themselves at Putney, Vt., and put their property into a common stock: they gave up the use of prayer, all religious service, and the observance of the Lord's Day; they renounced allegiance to the United States, and set up their 'Family' in 'celestial order;' those who were married renounced their marriage ties, and a 'complex marriage' was established between all the males and all the females of the 'Family.' Noyes found it necessary to add to his original principles, that the Family was wiser than the individual, who *might* stray from the path of grace; that the inclinations of individuals must be submitted to the opinion of the Family. Having dispensed with law, he set up public opinion as a controlling power in its stead. Quarrelling, however, broke out among the members; their differences were brought before the law courts; and when the details of the Family system became known, the people of Putney made the place too hot for the Perfectionists. Their establishment was broken up; but a portion of the Putney Family—about 50 men, as many women, and about the same number of children—soon established themselves in a new home, in a then sequestered district in Oneida, N. Y.

At Oneida creek, the new 'Family' purchased about 600 acres of forest-land, and proceeded to bring it under cultivation. They made it one of the most productive estates in the Union; they also established manufactures of various kinds; and in the course of 30 years, they became a prosperous and even a wealthy community of about 250 persons. The men wore no particular garb, but usually dressed like the country people around them: the women had their hair cut short, and parted down the centre; abjured stays and crinoline; wore a tunic falling to the knee, and trousers of the same material; a vest buttoning high toward the throat; and a straw hat. Their neighbors became accustomed to the P. and their ways, and let them live in peace. On settling at Oneida, the controlling function of criticism was strengthened by being made more systematic; and its operation was met



## PERFIDIOUS--PERFLATION.

submissively. The industry of each for the common good was thus secured. The more advanced members abstained from animal food; they drank no beer, and only a weak home-made wine; and had nothing to do with doctors. In 1874 the community comprised 238 persons. A branch soc. of 40 members was established at Wallingford, Conn.

While all the males and females of the 'Family' were united by a 'complex marriage,' their intercourse—which, in theory, is unfettered by any law—is and was, in practice, subject to considerable regulation, based mostly on what were claimed to be scientific principles. There are four things, according to Noyes, necessary to the organization of a true family: (1) the reconciliation of its members with God; (2) their salvation from sin; (3) recognition of the brotherhood and equality of man and woman; (4) community of labor and its fruits. Communism, he asserts, can prosper only when the previous conditions exist. The Perfectionist theory is that for reconciliation to God and salvation from sin nothing is necessary but 'faith:' this faith seems merely their name for self-will; let a man believe that he is reconciled to God, and his sins are immediately washed away. It is instantly evident what is the real meaning and effect of such 'perfection' as this.

The open immorality of the community at length led many citizens to petition the legislature for its suppression. In consequence of the growing pressure of public sentiment, Noyes, with a few adherents, removed to Canada, where he died 1886; the remaining members practically gave up their peculiar tenets, and organized a joint-stock company 1881, incorporated as the Onida Community, Limited. There are 250 stockholders, with capital \$600,000 and a large surplus. The company cultivates about 600 acres of land, cans great quantities of fruit and vegetables, has a large factory in which steel-traps are made, and a silk factory which employs 100 hands. The branch at Niagara Falls manufactures table-ware. Questions concerning the relative property rights of the members and incorporators were submitted to a referee appointed by the supreme court of the state 1889.

PERFIDIOUS, a. *pér-fid'í-ús* [L. *perfidiosus*, false, faithless—from *perfidus*, treacherous; *perfidia*, perfidy—from *per*, without, from the notion of *going through* and leaving; *fides*, faith: It. *perfito*; F. *perfitte*, perfidious]: false to trust or confidence reposed in; treacherous; proceeding from treachery; false-hearted. PERFID'IOUSLY, ad. *-lí*, in a perfidious manner; treacherously. PERFID'IOUSNESS, n. *-nēs*, or PERFIDY, n. *pér'fí-dí*, violation of faith or trust reposed in; treachery; faithlessness.—SYN. of 'perfidious': traitorous; disloyal; unfaithful; faithless.

PERFLATION, n. *pér-flá'shūn* [L. *perflatus*, a blowing through—from *per*, through; *flo*, I blow]. the act of blowing through.

## PERFOLIATE—PERFORM.

**PERFOLIATE**, a. *pér-fō-lī-ál* [L. *per*, through; *foliātus*, leaved—from *folium*, a leaf: F. *perfolié*]: in bot., applied to a leaf with the lobes of the base so united as to appear as if the stem ran through it.

**PERFORATE**, v. *pér-fō-rāt* [L. *perforātus*, bored through—from *per*, through; *foro*, I bore or pierce: It. *perforare*: F. *perforer*]: to pierce with a pointed instrument; to make holes by boring or pressure. **PERFORATING**, imp. **PERFORATED**, pp.: **ADJ.** bored or pierced. **PERFORATOR**, n. *-tér*, an instrument that pierces holes. **PERFORABLE**, a. *-fō-rā-bl*, that may be pierced. **PERFORATION**, n. *-fō-rā'shūn* [F.—L.]: the act of boring or piercing through; a hole or aperture passing through. **PERFORATIVE**, a. *-rā-tív*, having power to perforate.

**PERFORCE**, ad. *pér-fōrs'* [L. *per*, by or through, and *force*]: by force; violently.

**PERFORM**, v. *pér-fawrm'* [OE. *perfourne*, to complete: OF. *parfournir*, to consummate, to perform—from *par*, thoroughly, for L. *per*, and *fournir*—the modern *fournir*, to furnish, to complete: OHG. *frumjan*, to procure]: to execute thoroughly or completely; to do; to carry out; to complete; to achieve; to play on an instrument; to represent or act a part upon the stage. **PERFORMING**, imp.: **N.** act done; act of executing. **PERFORMED**, pp. *-fawrm'd'*. **PERFORMER**, n. *-ér*, one who makes an exhibition of his skill, as on an instrument of music, or on the stage. **PERFORMABLE**, a. *-ā-bl*, that may be done; practicable. **PERFORMANCE**, n. *-āns*, the carrying out or completion of a thing; an acting on the stage; an entertainment provided at any place of amusement; something written or produced; something done; a feat or exploit; a deed. **PERFORMANCE OF CONTRACTS**, one of the modes of satisfying the contract, which may be either by doing some specific thing, or not doing something, or by payment of money. It is a good answer to any action brought by one party against another, for breach of contract, that what was contracted for has been already performed.—**SYN.** of 'perform': to accomplish; effect; do; act; transact; execute; discharge; fulfil; consummate; produce; work.

## PERFUME—PERFUMERY.

**PERFUME**, n. *pér-fūm* or *pér-fūm'* [F. *parfum*; It. *profumo*, any perfume or sweet smell—from F. *par*, for L. *per*, thoroughly, and F. *fumer*, to smoke—from L. *fumārē*, to smoke—from *fūmus*, smoke, vapor—*lit.*, to smoke thoroughly]: substance that affects agreeably the organs of smell by giving forth a vapor generally invisible; sweet odor; scent (see **PERFUMERY**): V. *pér-fūm'*, to fill or impregnate with a sweet or grateful odor; to scent. **PERFU'MING**, imp.: N. the act of one who perfumes a thing; process by which anything is perfumed. **PERFUMED'**, pp. *-fūmd'*: **ADJ.** scented or impregnated with perfumes. **PERFU'MER**, n. *-fū'mér*, one whose trade is to make or sell perfumes and other articles of the toilet. **PERFU'MERY**, n. *-mér-ī*, perfumes in general; the articles sold by a perfumer (see below). **PERFU'MATORY**, a. *-mă-tér-ī*, that perfumes.—**SYN.** of 'perfume, n.': fragrance; odor; smell; aroma.

**PERFU'MERY**: substances which give forth delicate odors or scents; also the art of preparing them. Perfumes are of three distinct classes when derived from plants; a fourth class is of animal origin.

**CLASS I.**—Various odoriferous gum-resins, which exude naturally from some trees; and to increase the produce, the plants are often purposely wounded. Perfumes of this class are the most ancient, and have been in use from the earliest recorded times. The most important are benzoin, olibanum, myrrh, and camphor. The export of these from eastern and tropical lands is immense—amounting to millions of lbs. annually. The import of crude camphor gum alone into the United States, in the year ending 1889, June 30, was 1,961,018 lbs., valued \$287,333. Gum-resins form the chief ingredients in 'Incense' (q.v.) and in Pastils (q.v.).

**CLASS II.**—Perfumes procured by distillation. As soon as the Greeks and the Romans learned the use of the still, an invention imported from Egypt, they quickly adapted it to the separation of the odorous principle from the numerous fragrance-bearing plants indigenous to Greece and Italy. An essential oil or otto thus procured from orange-flowers bears in commerce to this day the name of Neroly, supposed to be named after Emperor Nero. Long before that time, however, fragrant waters were in use in Arabia. Odor-bearing plants contain the fragrant principle in minute glands or sacs; these are found sometimes in the rind of the fruit, as the lemon and orange; in others, in the leaves, as sage, mint, and thyme; in the wood, as rosewood and sandal-wood; in the bark, as cassia and cinnamon; in the seeds, as caraway and nutmeg. These glands or bags of fragrance may be plainly seen in a thin-cut stratum of orange-peel; also in a bay leaf, held up to the sunlight, all the oil cells may be seen like specks. All these fragrance-bearing substances yield by distillation an essential oil peculiar to each; thus is procured oil of patchouli from the leaves of the patchouli plant, *Pogostemon Patchouli*, native of Burmah; oil of caraway, from the cara-

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way-seed; oil of geranium, from the leaves of the *Geranium rosa*; oil of lemon, from lemon-peel; and a hundred others in great variety.

The old name for these pure odoriferous principles was Quintessence: latterly, they have been termed Essential Oils; they are now, in modern scientific works, often termed Ottos, from the Turkish word attar, which is applied to the well-known otto or attar of roses: see OILS. All the various essential oils or ottos are very slightly soluble in water, so that in the process of distillation the water which comes over is always fragrant. Thus, elder-water, rose-water, orange-water, dill-water, are, as it were, the residue of the distillation for obtaining the several ottos. The process of Distillation (q.v.) is very simple: the fragrant part of the plant is put into the still and covered with water; and when the water is made to boil, the ottos rise with the steam, are condensed with it in the pipe, and remain floating on the water, from which they are easily separated by decanting. In this way 100 lbs. of orange, lemon, or bergamot fruit peel yield about 10 ounces fragrant oil; 100 lbs. of cedar-wood give about 15 ounces oil of cedar; 100 lbs. of nutmeg yield 60 to 70 ounces oil of nutmeg; 100 lbs. of geranium leaves yield 2 ounces oil. Every fragrant substance varies in yield of essential oil. The variety of essential oils is endless; but there is a certain relationship among odors as among tints. The lemon-like odors are most numerous, such as verbena, lemon, bergamot, orange, citron, citronella; then the almond-like odors, such as heliotrope, vanilla, violet; then spice-odors, cloves, cinnamon, cassia. All may be classified into 12 well-defined groups. All these ottos are very soluble in alcohol, in fat, butter, and fixed oils. They also mix with soap, snuff, starch, sugar, chalk, and other bodies, to which they impart their fragrance. Their principal consumption is for scenting soap.

Though snuff is in far less popular use than in the last century, yet increased population and increased facilities of export cause a production of scented snuff greater now than 50 years ago: it is in demand especially in the fur countries of n. Canada. There is large consumption of fragrant essential oils in the manufacture of toilet powders: a mixture of starch and orris, differently scented, is in general demand for drying the skin of infants after the bath. Precipitated chalk and powdered cuttle-fish bone, being perfumed with otto of roses, powdered myrrh, and camphor, become 'Dentifrice.' The ottos of peppermint, lavender, rose, and others, are extensively used in scenting sweetmeats and lozenges.

More than 200,000 lbs. of various ottos, valued more than £180,090, have been imported into Britain in one year; while at least one-third as much again was distilled in England.

CLASS III.—Perfumes proper, such as are used for perfuming handkerchiefs, etc. Contrary to the general belief, nearly all the perfumes derived from flowers are

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not made by distillation, but by the processes of *enfleurage* and *maceration*. Although this mode of obtaining the odors from flowers has certainly been in practice for two centuries in the valley of the Var, in s. France, it is only by the publication of a recent work that the method has been made generally known (see *Art of Perfumery*, by Septimus Piesse, PH.D., 8vo, 50 cuts; Longman; 4th ed. 1880). The odors of flowers do not, as a general rule, exist in them as a store or in a gland, but are developed as an exhalation. While the flower breathes, it yields fragrance; kill the flower, and fragrance ceases. It has not been ascertained when the discovery was made of condensing, as it were, the breath of the flower during life; what we know now is, that if a living flower be placed near to grease, animal fat, butter, or oil, these bodies absorb the odor given off by the blossom, and in turn themselves become fragrant. If we spread fresh unsalted butter on the bottom of two dessert-plates, and then fill one of the plates with gathered fragrant blossoms of clematis, covering them over with the second greased plate, we shall find that after 24 hours the grease has become fragrant. The blossoms, though separated from the parent stem, do not die for some time, but live and exhale odor; which is absorbed by the fat. To remove the odor from the fat, the fat must be scraped off the plates and put into alcohol; the odor then leaves the grease and enters into the spirit, which thus becomes 'scent,' and the grease again becomes odorless.

The flower farmers of the Var follow precisely this method on a very large scale, with little practical variation, with the following flowers—rose, orange, acacia, violet, jasmine, tuberose, and jonquil. The process is termed *enfleurage*. In the valley of the Var, there are acres of Jasmine, of tuberose, of violets, and the other flowers named; in due season the air is laden with fragrance—the flower harvest is at hand. Women and children gather the blossoms, which they place in little panniers like fishermen's baskets, hung over the shoulders. They are then carried to the laboratory of flowers, and weighed. In the laboratory the harvest of flowers has been anticipated. During the previous winter, great quantities of grease, lard, and beef-suet have been collected, melted, washed, and clarified. In each laboratory are several thousand *châssis* (sashes), or framed glasses, upon which the grease to be scented is spread, and on this grease the blossoms are sprinkled or laid. The *châsse en verre* is, in fact, a frame with a glass in it as near as possible like a window-sash, only that the frame is two inches thicker, so that when one *châsse* is placed on another there is a space of four inches between every two glasses, thus allowing space for blossoms. The illustration shows the *châsse* with grease and flowers upon it (fig. 1), also a pile of the same as in use. The flower blossoms are changed every day, or every other day, as may be convenient in regard

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to the general work of the laboratory or flowering of the plants. The same grease, however, remains in the *châsse* so long as the particular plant being used yields blossoms. Each time the fresh flowers are put on, the grease is 'worked'—that is, serrated with a knife—so as to offer a fresh surface of grease to absorb odor. The grease being *enfleurée* in this way for three weeks or more—in fact, so long as the plants produce blossoms—is at last scraped off the *châsse*, melted, strained, and poured into tin canisters, and is now fit for exportation. Fat or oil is perfumed with the same flowers by the process of maceration—that is, infusion of the flowers in oil or melted fat. For this end, purified fat is melted in a *bain-marie*, or warm bath, and the fresh blossoms are infused in it for several hours. Fresh flowers being procured, the spent blossoms are strained away, and new flowers added repeatedly, so long as they can be procured. The *bain-marie* is used in order to prevent

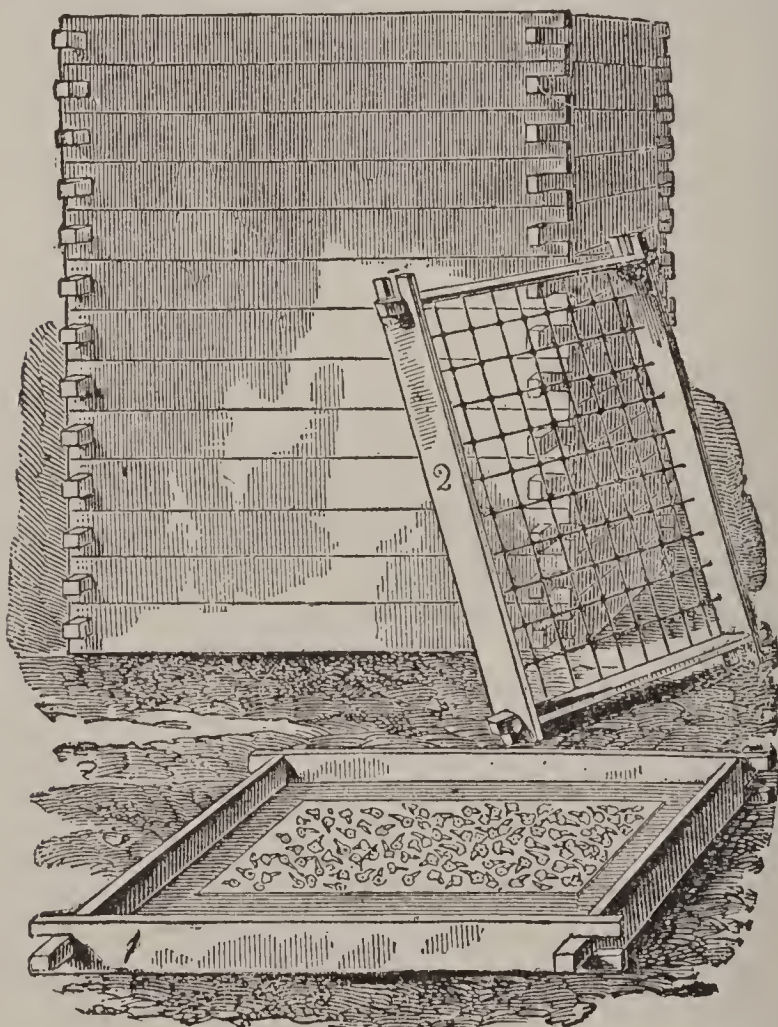


Fig. 1.

1, Châssis en Verre; 2, Châssis en Fer.

the grease becoming too hot from exposure to the naked fire; so long as the grease is fluid, it is warm enough. Oil does not require to be warmed, but improved results are obtained when it is slightly heated.

Jasmine and tuberose produce best perfumed grease by enfleurage; but rose, orange, and acacia give more satisfactory products by maceration; while violet and

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jonquil grease is obtained best by the joint processes—enfleurage followed by maceration. The *châsse en fer* (2, fig. 1) is for enfleurage of oil. Instead of glass, the space is filled with a wire net; on which is laid a *molleton*, or thick cotton fabric—moleskin, soaked with oil; on this the flowers are laid, just as with solid grease. In due time—that is, after repeated changing the flowers—the oil becomes fragrant, and it is then pressed out of the moleskin cloth. Oil of jasmine, tuberose, etc., is prepared in this way. In order now to obtain the perfume of these flowers in the form for scenting handkerchiefs, it is requisite only to infuse in strong alcohol the scented fat or oil, made by any of the above

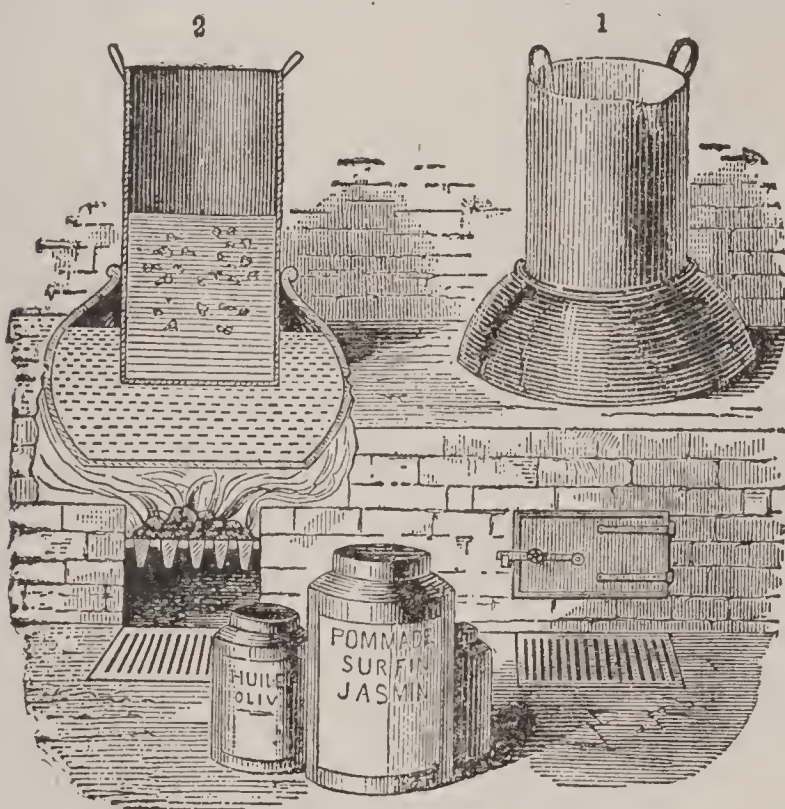


Fig. 2.

1, Bain-marie; 2, Section of Bain-marie.

methods. In extracting the odor from solid fat it has to be chopped up fine as suet is chopped, put into the spirit, and left to infuse for about a month. Scented oil has to be repeatedly agitated with the spirit. The result is, that the spirit extracts all the odor, becoming itself 'perfume,' while the grease again becomes odorless; thus is procured the essence of jasmine, essence of orange-flowers, essence of violets, and others above named, rose, tuberose, acacia, and jonquil.

It is remarkable that these flowers yield perfumes which, either separate or mixed in various proportions, are types of nearly all flower odors; thus, when jasmine and orange-flowers are blended, the scent produced is like sweet-pea; when jasmine and tuberose are mixed, the perfume is that of the hyacinth. Violet and tuberose

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resemble lily of the valley. All the various bouquets and nosegays, such as 'frangipane,' 'white roses,' 'sweet daphne,' are made on this principle.

The commercial importance of this branch of perfumes is indicated by the quantity of flowers annually grown in the district of the Var. Flower harvest: orange-blossoms 1,475,000 lbs.; roses 530,000 lbs.; jasmine 100,000 lbs.; violets 75,000 lbs.; acacia 45,000 lbs.; geranium 30,000 lbs.; tuberose 24,000 lbs.; jonquil 5,000 lbs.

CLASS IV.—Perfumes of animal origin.—The principal are Musk (q.v.), Ambergris (q.v.), Civet (q.v.), and Castor (q.v.). The aroma of musk is the most universally favorite of all perfumes; it freely imparts odor to every body with which it is in contact. Its power to impart odor is such, that polished steel will become fragrant of it if the metal be shut in a box where there is musk, contact not being necessary. In perfumery manufacture, musk is mixed with other odorous bodies to give permanence to a scent. The usual statement as to the length of time that musk continues to give out odor has been called in question. If fine musk be spread in thin layers upon any surface, and fully exposed to a changing current of air, all fragrance, it is said, will be gone in six to twelve months. Civet is exceedingly potent as an odor, and when pure, and smelled at in the bulk of about an ounce, is utterly insupportable from its nauseousness: in this respect it exceeds musk. When, however, civet is diluted so as to offer but minute quantities to the olfactories, then its perfume is generally admitted; this is so with gas-tar; but the fragrant principle is the same as that breathed by the beautiful narcissus. Castor is in our day almost obsolete as a perfume.

The average importation into Britain of musk per annum for a period of five years was 9,388 ounces, value £10,688; export 1,578 ounces, value £2,143; leaving for home consumption every year 7,810 ounces, value £8,545. Average importation per annum for a similar period: otto of roses 1,117 ounces, value £13,561; vanilla 3,525 lbs., value £12,568; ambergris 225 ounces, value £225; civet 355 ounces, value £300; orris-root 420 hundred-weight. Imports into the United States, of perfumery, cosmetics, and all toilet preparations, for year ending 1889, June 30, were valued \$343,964. Exports of volatile or essential oils were valued at \$188,603; of general perfumery and cosmetics \$439,794.

The works on perfumes are very few; that of Madame Celnart, in the Librairie Roret, is most worthy of notice among the French (transl. by C. Morfit, Philadelphia). In England, *The British Perfumer*, by C. Lilly (1822), was the only work prior to the *Art of Perfumery* noticed above (1855); see also Rimmel's *Book of Perfumes* (1875).



PERFUNCTORY—PERGOLESI.

PERFUNCTORY, a. *pěr-fūngk'tér-ĭ* [L. *perfunctus*, discharged, performed—from *per*, through, thoroughly; *functus*, performed: It. *perfuntorio*: Sp. *perfunctorio*]: done only with the view of getting through duty; done carelessly or superficially; negligent. PERFUNC'TORILY, ad. *-rĭ-lĭ*. PERFUNC'TORINESS, n. *-nĕs*, negligent performance.

PERGAMENEOUS, a. *pěr'gă-mĕ'nĕ-ŭs*, or PER'GAMENTA'CEOUS, a. *-tă'shŭs* [L. *pergamēna*, parchment—from *Pergamos*, in Asia Minor, where parchment-making was first developed as a trade (see PARCHMENT)]: resembling parchment; of the texture of parchment.

PER'GAMOS, properly PER'GAMUM: anciently a city of Mysia in Asia Minor, on the navigable river Caicus, 13 to 14 m. from its mouth. According to tradition, the place was of Greek origin. It acquired prominence first when Lysimachus, one of Alexander's generals, chose it as a stronghold for his treasures. Under Philetærus it became cap. of a state B.C. 283. His successor, Eumenes I., maintained its independence against the Seleucidæ, though the title of king was assumed first by Attalus I., who reigned B.C. 241–197. He allied himself with the Romans against Philip of Macedon; and this alliance subsisted throughout succeeding reigns, in which the kingdom increased in extent and importance, till at last Attalus III., surnamed Philometer (d. B.C. 133), left it with all his treasures to the Romans, who successfully maintained the right thus acquired, and under whom the city continued to flourish. It was the focus of all the great military and commercial routes of Asia Minor, and Pliny describes it as *longe clarissimum Asiæ Pergamum*. The Attali collected in P. a library inferior only to that of Alexandria: it contained 200,000 rolls; it was finally removed to Alexandria, as Antony's gift to Cleopatra, and there met destruction. P. was also the seat of a famous grammar school, and is said to have given its name to Parchment (q.v.). It was the seat of Æsculapian worship, and had a distinguished medical school. It was the scene of one of the earliest triumphs of Christianity, and of one of the first persecutions, and contained one of the 'seven churches of Asia' (Rev. i. 11, ii. 12–17).—P. sank under the Byzantine emperors, but the place still exists under the name *Bergamah*, and is noted for the magnificence of its ruins—temples, palaces, aqueducts, gymnasia, amphitheatres, and city walls.

PERGOLESI, *pěr-go-lă'sĕ* (or PERGOLE'SE, *pěr-go-lă'să*), GIOVANNI BATTISTA: Italian musician of the Neapolitan school: 1710, Jan. 3—1736, Mar. 16; b. Jesi, near Ancona (according to Marchese di Villarosa, his latest biographer). In 1717 he was admitted into the Conservatorio dei Poveri di Gesù Cristo at Naples, and studied the violin under Domenico di Matteis, and musical composition under Gaetano Greco and Durante.

PERHAPS—PERĪ.

Under the conviction that melody and taste were sacrificed to learning by most of the masters of his time, he abandoned the style of Scurlatti and Greco for that of Vinci and Hasse. Failing at first in opera, he turned to sacred music, and his first two masses immediately established his reputation as a composer. His first great work was the oratorio *San Guglielmo d'Aquitania*, 1731. In that and the following year appeared his operas *La Serva Padrona* (an operetta), *Il Prigionier Superbo*, and *Lo Frate Innamorato*; 1734, *Adriano in Siria*; 1735, *Il Flaminio* and *L'Olimpiade*. In 1734 he received the appointment *maestro di capella* of the Church of Loretto. In consequence of delicate health, he removed to Pozzuoli, where he composed the cantata *Orfeo*, and his pathetic *Stabat Mater*, for which he was paid in advance 10 ducats (about \$8.65), and deemed the compensation large. He died there of consumption. P. composed a number of pieces for the church, which were better appreciated during his lifetime than his secular compositions; also a violin concerto, and 30 trios for violin, violoncello, and harpsichord. All his works are characterized by sweetness and freedom of style. *La Serva Padrona* is still a favorite: in 1754 it ran in Paris 150 nights in succession (in French transl.); and was revived at the Opéra Comique 1867, and at the Royalty Theatre, London, 1873.

PERHAPS, ad. *për-häps'* [L. *per*; F. *par*, by, and Eng. *hap*, luck, chance]: by chance; possibly.

PERI-, *për'i* [Gr. *peri*: Skr. *pari*, round about]: a Greek prefix signifying around; about; near; with.

PERI, n. *për'i* [Pers. *pari*; Avestan, *pairi*, fairy]: in *Pers. myth.*, spiritual being of lower order; an elf or fairy. According to the mythical lore of the East, a P. is a descendant of the fallen spirits, which spends its life in all imaginable delights, is immortal, but is excluded from Paradise till its ancestral spirits shall have fulfilled their penance through long ages. It takes an intermediate place between angels and demons, and is either male or female. So far from there being only female Peris, as is supposed by some, and these the wives of the Devs, the Peris, on the contrary, are in constant strife with these Devs. Otherwise, they are quite innocuous to mankind; and, like the fairies of our popular mythology, are, when female, of surpassing beauty. One of the finest compliments to be paid to a Persian lady is to speak of her as Perizadeh (born of a Peri; Greek, Parisatis). Peris belong to the great family of genii, or jinn: a belief in whom is enjoined in the Koran, and for whose conversion, as well as for that of man, Mohammed was sent (see Koran, lv., lxxii., lxxiv.).

## PERIAGUA—PERIASTRAL.

PERIAGUA, *pěr-î-â'gwâ* (formerly PERIAUGUA, *pěr-î-aw'gwâ*, etc.; properly PIRAGUA, *pî-râ'gwâ*): term from the Spanish (W. Indian), variously applied to large canoes and flat-bottomed boats in different countries. One kind is a large canoe composed of the trunks of two trees, hollowed and united into one fabric; whereas an ordinary canoe is formed of the body of one tree only. Periaguas are used in the Pacific, and were formerly much used among the W. I. Islands, on the lower Mississippi, and on the coast of the Carolinas.

PERIANDER, *pěr-î-ân'dér*: B.C. 665-585: despot of Corinth, in succession to his father Cypselus, B.C. 625. His rule was at first mild and beneficent, but afterward he became a cruel tyrant. He murdered his wife at the instigation of his concubines, but in a fit of remorse burned the concubines alive. He reduced tyranny to a system by putting down eminent and aspiring citizens and sowing distrust between classes and individuals. By his constant wars he wasted the energies and distracted the attention of the citizens. But his foreign conquests enriched Corinth and gave her prestige among the Grecian states. He was not only a patron of literature, but was himself the author of a collection of moral maxims in 2,000 verses; he was even reckoned among the 'seven sages of Greece.' He banished to Corcyra his son Lycophron, and when in his old age he purposed to resign to Lycophron the tyranny, and himself to retire to Corcyra, the Corcyreans, alarmed, put Lycophron to death. P. in revenge shipped 300 of the noblest Corcyrean youths to Alyattes, King of Lydia, to be made eunuchs of, but the Samians rescued them from that fate.

PERIANTH, *n. pěr'î-ânth*, or PERIAN'THIUM, *n. -ân'thî-üm* [Gr. *peri*, around; *anthos*, a flower]: in *bot.*, the external floral whorls which surround the stamens and pistil—in this sense including calyx and corolla, which in some plants are not easily distinguished (see FLOWER). P. is a convenient term, as it can be applied indifferently to calyx and corolla; thus, when there is either a calyx or corolla, but not both, the P. is said to be *single*; when both are present, *double*. Both are really present in many endogenous plants, to which the use of the term P. is confined by some botanists; the single floral envelope of exogenous plants being regarded as a calyx, and the corolla supposed to be lacking. The P. is *regular* in some plants, *irregular* in others. It often displays great beauty, as in tulips, crocuses, lilies, etc. PER'I-AN'THAL, *a. -ân'thăl*, of or pertaining to a perianth; staminal.

PERIAPT, *n. pěr'î-âpt* [Gr. *peri*, around; *haptō*, I fasten]: in *OE.*, an amulet; something worn as a charm or preservative against evil or danger.

PERIASTRAL, *a. pěr-î-âs'tral*: around or among the stars: *N.* a body passing around or among the stars.

## PERIASTRON—PERICARDITIS.

PERIASTRON, n. *pěr-ĭ-ăs'tron*: in *astron.*, the point of nearest approach of the components of a binary star.

PERIBLEM, n. *pěr'ĭ-blēm* [Gr. *periblēma*, clothing, a cloak—from *peri*, around; *ballō*, I throw]: in *bot.*, a collection of layers of cells beneath the covering of the skin in plants—out of which the cortex arises.

PERIBŌLOS, n. *pěr-rĭb'ō-lōs* [Gr. *peri*, around; *ballō*, I cast]: in *anc. arch.*, a court or inclosure within a wall; the wall which surrounds a temple.

PERICAMBIUM, n. *pěr'ĭ-kām'bĭ-ŭm* [Gr. *peri*, around; new L. *cambium*, nutriment]: in *bot.*, the outer layer of the plerome, from which lateral roots arise.

PERICARDITIS: inflammation of the Pericardium (q.v.); disease of frequent occurrence; the result of a very large number of post-mortem examinations showing that in about 1 in 23 of all who die at adult age are traces of recent or old attacks of this disorder.

For reasons which will be obvious when we come to consider the physical signs of this disease, we begin with a notice of the anatomical changes in the inflamed membrane. Very soon after symptoms of P. begin to show themselves, there is an abnormal dryness of the serous membrane, speedily followed by increased secretion of fluid. The secreted fluid is sometimes almost entirely fibrinous, in which case it coagulates, and gives rise to adhesions between the heart and the pericardium; or it may consist almost entirely of serum, which remains liquid; or it may be and it most frequently is a mixture of the two. When there is a large amount of liquid effusion (a third of a pint or more) which is not reabsorbed, death usually occurs in a few days, in consequence of the interference of the fluid with the heart's actions; but when there is not much liquid effusion, or when the liquid part is absorbed, the pericardium becomes more or less adherent, and apparent recovery usually takes place.

In the cases that prove fatal when fibrinous fluid has been effused, but has not coagulated to such an extent as to cause complete adhesion of the heart to the pericardium, the partially coagulated fibrin (or lymph, as the older authors styled it) is seen to be of yellowish-white color, and to occur in a rugged, shaggy, or cellular form. Laennec compared the surface on which the lymph is deposited to that which would be produced by suddenly separating two flat pieces of wood between which a thin layer of butter had been compressed. Dr. Watson regards the appearance as more like the rough side of pieces of uncooked tripe than anything else; while others have compared it to lace-work, cut sponge, a honeycomb, a congeries of earth-worms, etc. When the patient dies at a more advanced stage of the disease—viz., soon after the whole of the membrane has become adherent—incipient blood-vessels, in the form of red points and branching lines, are seen, indicating that organization is commencing in the deposit, which if

## PERICARDITIS.

death had not ensued would have been finally converted into cellular or areolar tissue, and have occasioned the complete obliteration of the pericardial cavity.

The symptoms of P. are pain in the situation of the heart, increased by a full inspiration, by pressure upon or between the ribs in the cardiac region, and especially by pressure upward against the diaphragm by thrusting the fingers beneath the cartilages of the false ribs; palpitations; a dry cough and hurried respiration; discomfort or pain on lying on the left side; restlessness; great anxiety of countenance; and sometimes delirium. The pulse usually beats 110 to 120 in a minute, and is sometimes intermittent; and febrile symptoms are always present. These symptoms are seldom collectively present in any individual case, and until the time of Louis the diagnosis of this disease was uncertain and obscure. The physical signs, dependent on the anatomical changes above described, are, however, generally so distinct that by their aid the disease can be readily detected. They are three in number: 1. In consequence of irritation propagated to the muscular tissue of the heart at the commencement of the inflammation of its investing membrane, the ventricles contract with increased force, rendering the sounds of the heart louder and its impulse stronger than in health, or than in the more advanced stages of the disease. 2. When much fluid is effused into the pericardium, dulness on percussion is always observable to a greater degree than in health: this sign, very characteristic, is seldom perceived till the disease has continued two or three days. In relation to this increased dulness, it should be premised that in the healthy condition of the heart and lungs there is an irregular roundish space, with a diameter somewhat less than two inches, extending from the sternum (or breast-bone), between the level of the fourth and fifth ribs, toward the left nipple, in which a portion of the surface of the heart is not overlapped by the lungs, but lies in contact with the walls of the chest. This space should normally be dull on percussion. In P. the extent of the dulness beyond the normal limit indicates the amount of effusion. In extreme cases the dulness may extend over a space whose diameter is seven inches or more. Simultaneous with the increased dulness, there is diminution of the heart's sounds in consequence of the intervening fluid, and the impulse is often scarcely perceptible. 3. The rubbing of the inflamed and roughened surfaces upon each other gives rise to a sound commonly called the *friction sound*, but which has received various names. Thus, Dr. Watson calls it a *to and fro* sound, and observes regarding its variations that, 'like all the other morbid sounds heard within the chest, it is capable of much variety in tone and degree. Sometimes it very closely resembles the noise made by a saw in cutting through a board; sometimes it is more like that occasioned by the action of a file or of a rasp; but its essential character is that of *alternate rubbing*; it is a *to*

## PERICARDIUM

*and fro* sound.' This sound is heard early in the disease, before the surfaces of the pericardium are separated by the effusion of fluid; and it is due either to dryness of the membrane, or to its roughness from deposition of lymph. When the contiguous surfaces are either separated by fluid, or become adherent, the sound disappears; but when it has been lost from the first of these causes, it reappears after the fluid has been so far absorbed as to permit the surfaces again to come in contact. But here, again, its duration is brief, for the surfaces soon become adherent and cease to rub upon each other.

P. is a disease which occasionally runs a very rapid course, and terminates fatally in 48 hours or less. In ordinary cases, however, which terminate in apparent recovery, the disease generally begins to yield in a week or ten days; and excepting that adhesion remains, the cure appears complete in three weeks or less. But though these patients *apparently* recover, the pericardial adhesion commonly occasions other structural changes of the heart sooner or later to develop themselves; and in those cases that the physician has the opportunity of subsequently watching, it is observed that fatal disease of the heart, primarily due to the P., almost always supervenes. In slight cases it is probable that a true cure, without adhesion, may take place.

P. arises frequently from exposure to cold when the body is warm and perspiring. It is no uncommon result of a contaminated state of the blood, such as occurs in the exanthematous diseases, especially scarlatina, and in Bright's disease of the kidney; but beyond all comparison, it is of most frequent occurrence in association with acute Rheumatism (q.v.), of which it forms by far the most dangerous complication.—At the commencement of the disease, professional medical treatment should be secured. Perfect rest both of body and mind is essential; and all possible causes of excitement should be excluded. The diet should be mild and chiefly farinaceous, and little or no animal food should be allowed till the beginning of convalescence. Cooling drinks are agreeable to the patient, and may be taken freely with advantage throughout the disease.

PERICARDIUM, n. *pēr'ī-kâr'dī-ŭm* [Gr. *perikar'diōs*, being round the heart—from *peri*, round; *kardiā*, the heart: It. *pericardio*: F. *péricarde*]: conical membranous sac, containing the heart and the commencement of the great vessels to the extent of about two inches from their origin. It is placed with its apex upward behind the sternum, and to the left side, in the interval between the pleuræ—the serous sacs in which the lungs are inclosed; while its base is attached to the diaphragm. It is a fibro-serous membrane, consisting of an external fibrous and an internal serous layer. The fibrous layer is a strong, dense, fibrous membrane; the serous layer invests the heart, and is then reflected on the inner surface of the fibrous layer. Like all serous membranes, it

PERICARP—PERICLASE.

is a closed sac; its inner surface is smooth and glistening, and secretes a thin fluid which serves to facilitate the natural movements of the heart. PER'ICAR'DIA, n. plu. -dī-ā, the two surfaces of the membrane, one closely adherent to the heart, and the other containing it as a bag. PER'ICAR'DIAC, a. -āk, PER'ICAR'DIAN, a. -ān, and PER'ICAR'DIAL, a. -dī-āl, pertaining to the pericardium. PERICARDITIS, n. pēr'ī-kâr-dī'tis, inflammation of the serous membranous sac which surrounds the heart (see above).

PERICARP, n. pēr'ī-kârp, or PER'ICAR'PIUM, n. -pī-ŭm [L. *pericar'pium*—from Gr. *perikar'pion*, the covering of seed—from *peri*, around; *karpos*, fruit]: that which surrounds or incloses the seed of a plant; the shell or rind; the part of the fruit immediately investing the seed (see FRUIT). PER'ICAR'PIAL, a. -pī-āl, of or pertaining to a pericarp. PERICARPOIDAL, a. pēr'ī-kâr-poy'dāl [Gr. *eidos*, resemblance]: in *bot.*, having the appearance of a pericarp or wall of a fruit, as in the chestnut and overcup-oaks, where the cupula quite surrounds the fruit.

PERICHÆTIUM, n. pēr'ī-kē'shī-ŭm [Gr. *peri*, around; *chaitē*, long, loose, flowing hair, as that of the mane of a horse—hence metaphorically applied to the foliage of trees]: a name applied to the leaves that surround the base of the fruit-stalk of some mosses. PER'ICHÆTIAL, a. -shī-āl, pertaining to the perichætium.

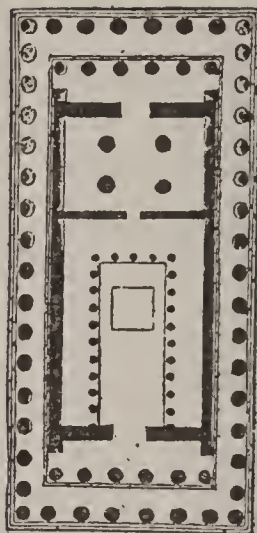
PERICHONDRIUM, n. pēr'ī-kōn'drī-ŭm [Gr. *peri*, about; *chondros*, cartilage]: in *anat.*, the fibrous membrane covering cartilages.

PERICLADIUM, n. pēr'ī-klā'dī-ŭm [Gr. *peri*, around; *klados*, a shoot of a tree broken off for grafting—from *klaō*, I break]: in *bot.*, the lowermost clasping portion of sheathing petioles.

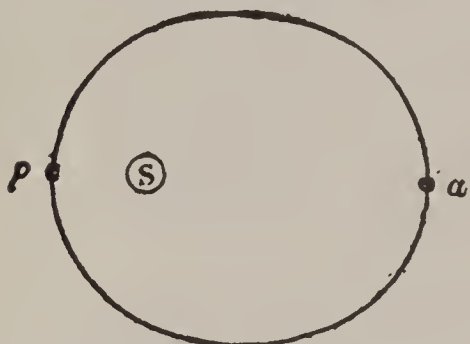
PERICLASE, n. pēr'ī-klās [Gr. *peri*, around; *klasis*, cleavage—from *klaō*, I break]: a Vesuvian mineral consisting of magnesia with a perfect cubic cleavage, occurring in grains of a dark-green color, found in ejected masses of white limestone.



Black Pepper (*Piper nigrum*).



Plan of Peripteral Temple.



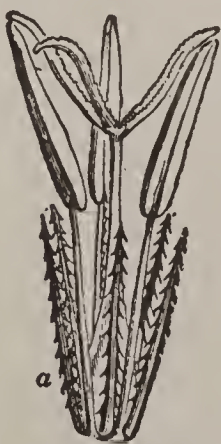
Orbit of Planet.—S, Sun; P, Perihelion; a, Aphelion.



Pericarp.—a, b, Capsule of Aristolochia; c, Capsule of Poppy; d, Section of Strobilus (or cone) of Pine; e, Nut—filbert; f, Drupe—plum or peach; g, Section of do.



Perfoliate Leaf.



a, Perigynium of a Sedge.



Perpender.



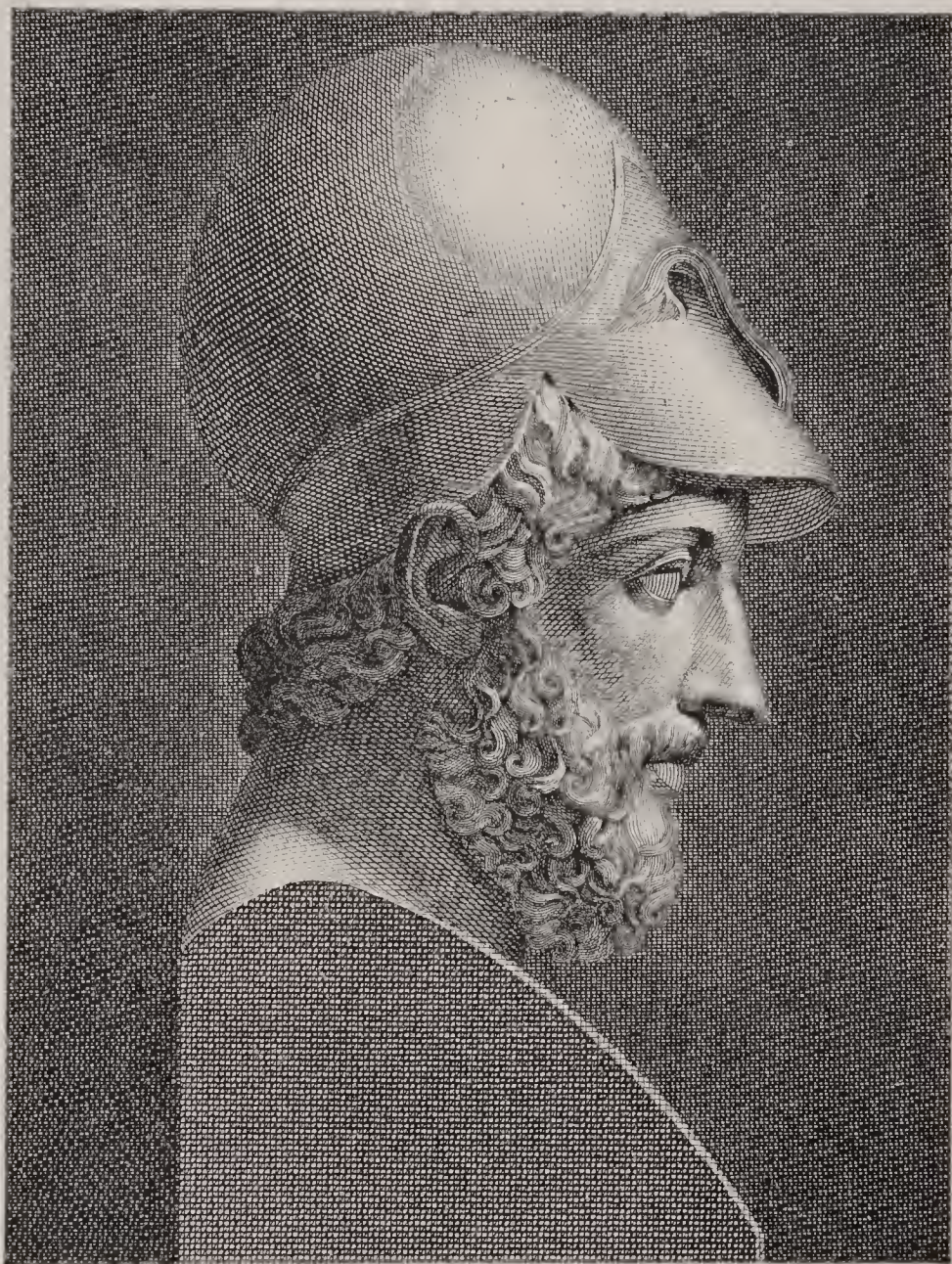
## PERICLES.

PERICLES, *pěr'ĩ-klēz* (Gr. PERIKLES): the most accomplished statesman of ancient Greece: born of distinguished Athenian parentage in the early part of B.C. 5th c.; d. B.C. 429, autumn. His father was that Xanthippus who won the victory over the Persians at Mycale, B.C. 479; and his mother, Agariste, was niece of the great Athenian reformer Cleisthenes, and was connected with the great house of the Alcmaeonidæ. P. received an elaborate education; but of all his teachers, the one whom he most revered, and from whose instructions he derived most benefit, was the philosopher Anaxagoras (q.v.). P. was conspicuous all through his career for the singular dignity of his manners, the 'Olympian' thunder of his eloquence, his sagacity, probity, and profound Athenian patriotism. When he entered on public life, Aristides had only recently died, Themistocles was an exile, and Cimon was fighting the battles of his country abroad. Although the family to which he belonged was good, it did not rank among the first in either wealth or influence; yet so transcendent were the abilities of P., that he rapidly rose to the highest power in the state as the leader of the dominant democracy. The sincerity of his attachment to the 'popular' party has been questioned, but without the shadow of evidence. At any rate, the measures which either personally or through his adherents he brought forward, and caused to be passed, were always in favor of extending the privileges of the poorer class of the citizens. P. seems to have grasped very clearly, and to have held as firmly, the modern 'radical' idea, that as the state is supported by the taxation of the body of the citizens, it must govern with a view to general and not to *caste* interests. B.C. 461, P., through the agency of his follower, Ephialtes, struck a great blow at the influence of the oligarchy, by causing the decree to be passed which deprived the Areopagus of its most important political powers. Shortly afterward the democracy obtained another triumph in the ostracism of Cimon. During the next few years the political course pursued by P. is not clearly discernible, but in general his attitude was hostile to the desire for foreign conquest or territorial aggrandizement, so prevalent among his ambitious fellow-citizens. B.C. 454, or shortly afterward, he magnanimously proposed the measure (which was carried) for the recall of Cimon, and about the same time commenced negotiations with the other Hellenic states with the view of forming a grand Hellenic confederation, the design of which was to put an end to the mutually destructive wars of kindred peoples—to make of Greece one mighty nation, fit to front the outlying world. The idea was sagacious and noble. Had it been accomplished, the semi-barbarous Macedonians would have menaced the civilized Greeks in vain, and even Rome at a later period might perhaps have found the Adriatic, and not the Euphrates, the limits of her empire. But the Spartan aristocrats were utterly incapable of mor-

## PERICLES.

ally appreciating such exalted patriotism, or of understanding the political necessity for it, and by their secret intrigues brought the well-planned scheme to naught. Athens and Sparta had for some time been in that mood toward each other which rendered the future Peloponnesian war inevitable. They are found always on opposite sides. When the Spartans, B.C. 448, restored to the Delphians the guardianship of the temple and treasures of Delphi, of which they had been deprived by the Phocians, the Athenians immediately marched an army thither, and reinstated the Phocians. Three years later, an insurrection broke out in the territories tributary to Athens—Megara, Eubœa, etc.—and the Spartans again appeared in the field as the allies of the insurgents. The position of Athens was critical. Pericles wisely declined to fight against all his enemies at once. A bribe of ten talents sent the Spartans home, and the insurgents were then rapidly and thoroughly crushed.

Cimon was succeeded in the leadership of the aristocratical party by Thucydides, son of Milesias, who, B.C. 444, made an effort to overthrow the supremacy of P. by attacking him in the popular assembly for squandering the public money on buildings, and in festivals and amusements. Thucydides made an effective speech; but P. immediately rose and offered to erect the buildings at his own expense, if the citizens would allow him to put his own name upon them instead of theirs. The sarcasm was successful, and P. was empowered to do as he pleased. But P. did not mean to be simply sarcastic; he wished to point out to the Athenians in a delicate way the spirit and aim of his policy, which was to make Athens, as a city, worthy of being the head and crown of Hellas. His victory in the assembly was followed by the ostracism of Thucydides; and during the rest of his career 'there was,' says the historian Thucydides, 'in name a democracy, but in reality a government in the hands of the first man.' The same author, however, informs us that P. never did anything unworthy of his high position; that he did not flatter the people, or oppress his adversaries; and that, with all his unlimited command of the public purse, he was incorruptibly honest. Soon the Samian war broke out, in which P. acquired renown as a naval commander. This war originated in a quarrel between the Milesians and Samians, in which Athens was led to take part with the Milesians. The Samians, after an obstinate struggle, were beaten, and a peace was concluded B.C. 440. The position in which Athens then stood toward many of the Greek states was peculiar. Since the time of the Persian invasion she had been the leader of the confederacy formed to resist the attacks of the powerful enemy, and the guardian of the confederate treasury kept in the isle of Delos. P. removed the treasury to Athens; and, committing the contingents of the al-



PERICLES.

499-429 B. C.



## PERICLINE—PERIDIUM.

lies for money—Athens, of course, herself undertaking to protect the confederacy—enormously increased the contributions to the ‘patriotic fund.’ The grand charge against P. is, that he applied the money thus obtained to other purposes than those for which it was designed; that, in short, he adorned and enriched Athens with the spoils of the allied states. But the objection is more plausible than solid, for, in fact, Athens kept up in admirable discipline a great fleet and a fine army; and P. made the Greek name more respected in his time than it had ever been before. It may be that his conduct is open to criticism in some respects, but a broad and just view of the motives which impelled him, and a fair consideration of the political exigencies of the time, will, in the main, justify his procedure. It is unnecessary to give a detailed account of all that he did to make his native city the most glorious in the ancient world. Greek architecture and sculpture, under his patronage, reached perfection. To P., Athens owed the Parthenon, the Propylæa, the Odeum, and numberless other public and sacred edifices; he also liberally encouraged music and the drama; and, during his rule, industry and commerce flourished, and prosperity was universal in Attica. The age of P. was the golden age of Athens and of ancient Greece.

At length, B.C. 431, the long-foreseen and inevitable ‘Peloponnesian war’ broke out between Athens and Sparta. It terminated most disastrously for Athens, but P. is not blamable for the result: the policy which he recommended was not pursued. P. died after a lingering sickness.—For a notable episode in his life, see ASPASIA.

PERICLINE, n. *pěr'î-klîn* [Gr. *perikli'nēs*, a sloping or shelving all round—from *peri*, about; *klinō*, I bend]: a semi-opaque variety of albite in which a portion of the soda is replaced by potash. PER'ICLI'NAL, a. *-klî'nāl*, dipping on all sides from a central point or apex—applied to strata which dip in this manner.

PERICLINIUM, n. *pěr'î-klîn'î-ŭm* [Gr. *peri*, around; *klinē*, a bed]: in *bot.*, the involucre of *Compositæ*.

PERICOPE, n. *pě-rîk'ō-pě* [I.L., from Gr. *perikope*, from *peri*, around, and *kopto*, cut]: 1. A selection from a book; extract. 2. Eccl. An arrangement of selections from the Epistles and Gospels adapted to Lord's Days and festivals.

PERICRANIUM, n. *pěr'î-krā'nî-ŭm* [Gr. *peri*, around; *kranîōn*, the skull—from *kara*, the head]: the fibrous membrane that goes round or invests the skull, identical in structure and function with the periosteum.

PERIDERM, n. *pěr'î-děrm* [Gr. *peri*, about; *derma*, skin]: in *bot.*, the outer layer of bark.

PERIDIUM, n. *pě-rîd'î-ŭm*, PERID'IA, n. plu. *-î-ă* [Gr. *peridēō*, I wrap round—from *deō*, I bind]: in *bot.*, the coat immediately enveloping the sporules of the lower tribes of acotyledons; a covering, as of a puff-ball. PERIDIOLA, n. plu. *pěr'î dî'ō-lă* [L. dim. of *peridium*]: a number of small peridia inclosed in a general covering.

## PERIDOT—PÉRIGORD.

**PERIDOT**, n. *pěr'z-döt* [F. *péridot*, peridot: Ar. *feridat*, a precious stone]: jewellers' designation for the green transparent varieties of Olivine. It is included with Olivine under the general term Chrysolite (q.v.), which, however, is more specifically applied to the stone when yellow or yellowish-green. P. is the softest of gem-stones, little harder than glass. It is supposed to be the topaz of the ancients.

**PERIECIANS**: see PERIÆCI.

**PÉRIER**, *pā-re-ā'*, **CASIMIR**: French statesman: 1777, Oct. 21.—1832, May 16; b. Grenoble, dept. of Isère. Casimir, who was still at the college at Lyon when the Revolution broke out, went to Paris, and with his father and elder brother founded a banking company, which became the Bank of France. P. served in the army 1798–1801; then returned to his banking business in Paris; and sat in the chamber of deputies (about 1817–30). 1831, Mar. 31, he succeeded Lafitte as minister, serving till his death by cholera.—P. prospered greatly in his financial business; and in his official service he was sagacious, sincere, and patriotic. In principle he was a constitutionalist; moderating so far as possible the extreme zeal of all parties, but steadily laboring at home and abroad to extend constitutional liberty. He originated the political system known as the *Juste Milieu* (q.v.). His foreign policy was remarkably successful. He was a favorite with the people of Paris, and exerted upon them a great influence.

**PERIGASTRIC**, a. *pěr'z-gās'trīk* [Gr. *peri*, around; *gastēr*, stomach]: applied to the cavity which surrounds the stomach and other viscera, corresponding to the abdominal cavity of the higher animals.

**PERIGEE**, n. *pěr'z-jē*, or **PER'IGE'UM**, n. *-jē'üm* [F. *périgée*—from Gr. *perigeios*—from *peri*, about; *gē*, the earth: It. *perigeo*, the perigee]: that point in the orbit of the moon, or of a planet, which is nearest to the earth; opposed to *apogee* (see MOON). **PER'IGE'AN**, a. *-jē'an*, pertaining to the perigee.

**PERIGONE**, n. *pěr'z-gōn* [Gr. *peri*, around; *gonē*, seed]: in *bot.*, a term applied to floral envelopes; a synonym for *perianth*, especially when reduced to a single floral whorl. **PER'IGO'NIUM**, n. *-gō'nī-üm*, a barren flower in mosses, having involucreal scales.

**PERIGORD**, n. *pěr'z-görd* [from *Perigord*, in France]: mineral of a dark-gray color, an ore of manganese. **PERIGORD-PIE**, a pie made with truffles, esteemed by epicures. It is called also *Pâté de Périgueux* (see PÉRIGUEUX).

**PÉRIGORD**, *pā-re-gor'*: old prov. of s.w. France, forming part of the military govt. of Gascony and Guienne, and now included in Dordogne and Lot-et-Garonne. It became a co. in the 8th c., and was united to the crown by Henry IV. It was divided into Upper and Lower P.: Périgueux and Sarlat were the capitals.

## PERIGRAPH—PERIHELION.

**PERIGRAPH**, n. *pěr'î-grăf* [Gr. *peri*, around; *graphē*, a writing]: a careless or inaccurate delineation of anything; in *anat.*, the white lines or impressions that appear on the musculus rectus of the abdomen.

**PÉRIGUEUX**, *pā-rē-géh'*: town of France, cap. of the dept. of Dordogne; on the right bank of the Isle; 79 m. by rail e.n.e. of Bordeaux, 310 m. s.s.w. of Paris. Pop. (1901) 31,976. It consists of the ancient city of P. proper—gloomy in aspect, and with narrow streets but large and solidly built houses; and the *Puy St. Front*, which until 1240 was a separate and rival town. In the old town are many curious remains of Gothic architecture. The old ramparts have been demolished, and replaced by beautiful and spacious boulevards. The cathedral of St. Front is a majestic edifice, built 984–1047; unfortunately 'restored' 1865, with large loss of its antique features. It resembles St. Mark's at Venice, and the Byzantine churches. Its pointed arches were widely imitated in Aquitania, and prepared the way for the Gothic style. Quarries of building stone are worked in the vicinity, and many hands are employed in cutting and polishing marble. Paper, woolen cloths, cutlery, and hosiery are manufactured. The celebrated *Pâtés de Périgueux*, made of partridges and truffles, are largely made and exported.

P. is a town of the highest antiquity, the *Vesunna* mentioned by Cæsar. In ancient times, it was a city of much importance. It stood at the junction of five Roman roads, and contained a number of splendid edifices. Close to the modern town are still seen the remains of a vast amphitheatre, dating prob. from the 3d, possibly the 2d, c.; oval in form, and larger than the ancient amphitheatre of Nîmes: its diameter was 1,312 ft., and it could hold 40,000 spectators. There are also remains of ancient aqueducts, baths, and temples. The *Tour de Vésonne* is the most remarkable fragment of Roman architecture. It is still 89 ft. high, diameter 68 ft., and appears to have been much higher; is about 200 ft. in circumference, and has walls 6 ft. thick. It has neither doors nor windows. Its purpose is not known, but it is believed to have been the main part of a heathen temple.

**PERIGYNIUM**, n. *pěr'î-jîn'î-üm* [Gr. *peri*, around; *gunē*, a woman]: applied to the covering of the pistil in the genus *Carex*; the membranous covering of the pistil of sedges. **PERIGYNOUS**, a. *pěr-rj'î-nūs*, growing on some part that surrounds the ovary in a flower—applied to the corolla and stamens when attached to the calyx.

**PERIHELION**, n. *pěr'î-hē'li-ön*, or **PER'ÎHE'LÏUM**, n. *-li-üm* [Gr. *peri*, about; *hēlios*, the sun: F. *périkélie*]: the point in the orbit of a planet or a comet nearest the sun—the point farthest away from the sun is called *Aphelion* (q.v.). The position of the P., i.e., its long. e. or w. of the equinox, is one of the seven elements of a planet's orbit.

PERIL—PERIMYSIUM.

**PERIL**, n. *pěr'íl* [F. *péril*—from L. *peric'ũbum*, danger: It. *periglio*, *pericolo*]: hazard; danger; jeopardy; particular exposure to injury: V. to hazard; to expose to danger. **PER'ILLING**, or **PER'ILING**, imp. **PER'ILLED**, or **PER'ILED**, pp. *-ĩld*. **PER'ILOUS**, a. *-ĩl-ũs*, dangerous; full of peril; in *OE.*, smart; witty: see also **PARLOUS**. **PER'ILOUSLY**, ad. *-lĩ*. **PER'ILOUSNESS**, n. *-nēs*, quality of being perilous; danger; hazard.—**SYN.** of 'peril, n.': risk venture.

**PERILYMPH**, n. *pěr'ĩ-lĩmf* [Gr. *peri*, around; L. *lymp̄ha*, water]: the limpid fluid secreted by the serous membrane which lines the osseous labyrinth of the ear.

**PERIM**, *pā-rēm'*: small island belonging to Great Britain, in the strait of Bab-el-Mandeb, at the entrance to the Red Sea; lat. 12° 40' 30" n., long. 43° 23' e. P. is 1½ m. from the Arabian, and 9 m. from the African, coast: it is level, slightly above the sea; 3½ m. long. On both sides of this island the navigation is easy; the Little Strait, between the island and Arabia, is the passage usual for vessels. The island is bare, destitute of fresh water, and ill furnished with provisions, which are brought mostly from Aden. P. owes its importance wholly to its commanding position at the entrance of the Red Sea. On its s.w. side is an excellent harbor, capable of accommodating 40 men-of-war, within 100 yards from the shore. There is a walled light-house on the island. Fortifications were erected on the island 1857, but, with the temporary arsenal, etc., were subsequently removed. It was captured by Sir David Baird, and then occupied by the English 1799, and held by them as a check upon the designs of the French, then in Egypt. It was abandoned 1801, but was reoccupied by Great Britain 1857, for protection of her Indian possessions, thought to be exposed to some danger from the opening of the Suez Canal (q.v.). Pop. 149.

**PERIMETER**, n. *pěr-ĩm'ĩ-tēr* [F. *périmètre*—from Gr. *peri*, around; *metron*, a measure]: external or outward boundary or length of the boundary of a body or of any closed plane figure; or the sum of all its sides—applied usually to a figure bounded by straight lines; whereas *periphery* has a similar application to rounded or curving boundary-lines. **PERIMETRICAL**, a. *pěr'ĩ-mět'ri-kāl*, pertaining to.

**PERIMETRITIS**, n. *pěr'ĩ-mět-rĩ'tĩs* [Gr. *peri*, round about; *mētra*, the womb—from *mētēr*, a mother]: the inflammation of the peritoneal covering of the uterus, usually involving neighboring parts.

**PERIMYSIUM**, n. *pěr'ĩ-mĩ'zĩ-ũm* [Gr. *peri*, round about; *mus*, a muscle]: an outward investment or sheath of areolar tissue which surrounds an entire muscle and sends partitions inward between the fasciculi, furnishing to each of them a special sheath.



PERINÆUM—PERIOD.

PERINÆUM, n. *pěr'ĩ-ně'ũm* [Gr. *perinai'on*, the part between the anus and the scrotum—from *peri*, round about; *naiō*, I inhabit]: region of the lower part of the body, having the anus at its centre, bounded in front by the genitals and at the sides by the inner surfaces of the thighs. The part of the human body which forms the floor of the true pelvis is by anatomists divided into two portions. Of these, the anterior one, in front of the anus, is called the *true perinæum*, or urethral portion of the P.; the posterior portion, which contains the anus or termination of the rectum, is called the ischio-rectal region, or anal portion of the P. The anterior portion, or true P., is triangular in form, the apex being in front; the sides, about three inches in length, are formed by the rami of the pubes and ischium; and the base by an imaginary line joining the tuberosities of the ischium, and passing about half an inch in front of the anus. Through this space the urethra passes through a layer of strong fascia—the deep *pèrinæal* fascia—to communicate with the bladder; and in this space the opening is made in the operation of lithotomy. PERINÆAL, a. *pěr'ĩ-ně'ãl*, of or pertaining to the perinæum.

PERINEURIUM, n. *pěr'ĩ-nũ'rĩ-ũm* [Gr. *peri*, round about; *neuron*, a nerve]: the coarser sheathing of the nerves and nervous cords—the fine sheath of each fibre being termed ‘neurilemma.’

PERIOD, n. *pě'rĩ-õd* [F. *période*—from L. *periõdus*, a complete sentence, a period—from Gr. *periõdos*, a circuit, a passage round—from *peri*, around; *hodos*, a way: It. *periodo*]: stated number of years; a round of time, at the end of which a thing may return to a former state (see PERIOD, in Chronology): specified portion of time: state at which anything terminates: time occupied by the revolution of a heavenly body: end; conclusion: a complete sentence: the point (.) indicating the end of a sentence: a series of numbers recurring, or pointed off by a dot or comma. PERIODIC, a. *pě'rĩ-õd'ik*, or PE'RIOD'ICAL, a. *-õd'ĩ-kãl*, making a circuit; returning; appearing regularly or happening at certain stated times. PE'RIOD'ICAL, n. a publication which appears in numbers at stated intervals of time (see PERIODICALS). PE'RIOD'ICALLY, ad. *-lĩ*. PE'RIOD'ICALIST, n. *-ĩst*, one who publishes a periodical. PE'RIODIC'ITY, n. *-õd-ĩs'ĩ-tĩ*, state of having regular periods, or stated intervals, in changes or conditions (see below).—SYN. of ‘period’: date; time; era; epoch; age; generation; duration; bound; limit: determination; stop.

## PERIOD.

**PERIOD**, in Chronology: term used in the same sense as Cycle (q.v.), to denote an interval of time after which the astronomical phenomena to which it refers recur in the same order. It is used to denote also a cycle of cycles. Various periods have been invented by astronomers: the following are a few of the most important.

The Chaldæans invented the *Chaldæic Period*, or *Period of Eclipses*, from observing that, after a certain number of revolutions of the moon round the earth, her eclipses recurred in the same order and of the same magnitude. This period consists of 223 lunations, or 6,798.28 days, and corresponds almost exactly to a complete revolution of the moon's node. The Egyptians made use of the *Dog-star*, *Siriaca*, or *Sothic Period*, as it is variously called, to compare their civil year of 365 days with the true or Julian year of  $365\frac{1}{4}$  days. The period consequently consisted of 1,460 Julian years, corresponding to 1,461 Egyptian years, after the lapse of which the dates in both reckonings coincided. By comparing the solar and lunar years, Meton, an Athenian, invented B.C. 432 a lunar period of 6,940 days, called from him the *Metonic Cycle* (q.v.), also the *Lunar Cycle*. About a century afterward, the cycle of Meton was discovered to be an insufficient approximation to the truth; and as he had made the solar year too long by about  $\frac{1}{76}$  of a day, at the end of 4 Metonic cycles the solar reckoning was found to be in advance of the lunar by about 1 day, 6 hours. To remedy this, a new period, the *Calippic Period*, was invented by Calippus, consisting of 4 Metonic cycles less by one day, or 27,759 days. But as this period still gave a difference of 6 hours between the solar and lunar reckonings, it was improved by Hipparchus, who invented the *Hipparchic Period* of 4 Calippic periods less by one day, or 111,035 days, or about 304 Julian years, which is an exceedingly close approximation, being only  $6\frac{1}{2}$  minutes too long, when measured by the tropical year; and too short, but by an almost inappreciable quantity, when measured by the *Synodic Month* (see MONTH). The *Period of the Heliacal or Solar Cycle*, after which the same day of the month falls on the same day of the week, consists of 28 Julian years. If the year had regularly consisted of 365 days, that is, one day more than an exact number of weeks, it is evident that, at the end of seven years, the days of the month and week would again correspond; but the introduction of an intercalary day into every fourth year causes this coincidence to recur at irregular periods of 6, 11, 6, and 5 years successively. However, by choosing a period such as will preserve the leap-years in the same relative position to the other years, and at the same time consist of an exact number of weeks (both of which objects are effected by using the number 28, which is the least common multiple of 4 and 7), we insure the *regular* recurrence of the coincidence between the days of the week and of the month. The solar cycle is supposed to have been invented about

## PERIODIC ACID—PERIODICALS.

the time of the Council of Nice, A.D. 325, but it is arranged so that the first year of the first cycle corresponds to B.C. 9. In calculating the position of any year in the solar cycle, care must be taken to allow for the omission of the intercalary day at the beginning of each century, and its insertion in the first year of every fourth century: see LEAP-YEAR. The year 1880 was the 13th of the solar cycle. The *Julian Period* is a cycle of cycles, and consists of 7,980 ( $= 28 \times 19 \times 15$ ) years, after the lapse of which the solar cycle, lunar cycle, and the Indiction (q.v.) commence together. The period of its commencement has been arranged so that it will expire at the same time as the other three periods from which it has been derived. The year B.C. 4713 is taken as the first year of the first period; consequently A.D. 1 was the 4,714th of it, and 1890 was the 6,603d.—See CHRONOLOGY: CYCLE: CALENDAR: YEAR: MONTH: DAY: ERA: DATE: ETC.

**PERIODIC ACID**, *pěr'î-ôd'îk* [Eng. *iodine*]: an acid analogous to perchloric acid, and composed of one equivalent of iodine with seven of oxygen.

**PERIODICALS**: publications appearing at statedly recurring periods, and whose contents may comprise criticism, politics, religion, literature, science, arts, amusement, or general and miscellaneous subjects. Those periodicals which comprise chiefly critical essays are called *Reviews*.

The earliest periodical in Great Britain seems to have been *Philosophical Transactions of the Royal Society* (1665), which contained notices of books as well as original papers. P. professing to notice the books that were being published appeared soon afterward from time to time under the name *All the Works of the Learned*; and 1692 appeared the *Gentleman's Journal, or Monthly Miscellany*, properly the first English magazine. The *Gentleman's Magazine* was founded 1731 by Cave, the printer: it secured a fortune for its proprietor, and, surviving all its competitors, still exists, though lately somewhat assimilated in form to the new class of magazines. The periodical literature of Scotland was long represented by the *Scots Magazine*, founded 1739. The first English periodical that attempted anything like criticism was the *Monthly Review*, begun 1749. It was followed in 1756 by the *Critical Review*, founded by Smollett; and these two were long the leading periodicals of their class, though their criticism was meagre and unsatisfactory, according to our present notions. Another critical journal, the *Anti-Jacobin*, was established 1798. In 1802 a new era in criticism was begun by the establishment in Scotland of the *Edinburgh Review* (q.v.); followed in London by the *Quarterly Review*, of about equal merit and opposite politics, supported by Sir Walter Scott, Southey, Samuel T. Coleridge, Heber, and at a later period by Hartley Coleridge, Lord Mahon, and Gladstone. Another very important periodical, *Blackwood's Magazine*, sprang up in Edinburgh 1817 under the auspices of John Wilson

## PERIODICALS.

and Lockhart, as much above the literary mark of former magazines as the *Edinburgh* and *Quarterly* were above the mark of preceding reviews; in its politics strongly conservative, and in its early years somewhat violent. The review became the favorite medium for all parties to present their views on political, literary, or theological subjects. Of various reviews after the model of the *Edinburgh* and *Quarterly*, and published, like them, four times in the year, some—e.g., the *North British Review* and *National Review*—after a flourishing existence, succumbed to the demand for cheaper periodicals, appearing at more frequent intervals. Among existing reviews appearing quarterly, may be mentioned the *Edinburgh* and *Quarterly*, still among foremost British periodicals; the *Westminster Review*, established 1824, characterized by freedom in handling philosophical and theological topics, and containing essays by John Stuart Mill, Carlyle, Grote, John Sterling, and Lord Houghton; and the *Dublin Review*, Rom. Cath., founded 1836. Many of the newer reviews appear monthly. Of these, the *Contemporary Review* and the *Nineteenth Century* are very ably conducted; as is also the *Fortnightly Review* (at first published twice a month), considered the organ of the very advanced liberal party. There are also weekly reviews, which unite with the review more or less of the character of a newspaper: prominent among these are the *Athenæum*, established 1828; the *Spectator*, 1828; the *Saturday Review*, 1856; the *Academy*, 1869. Some daily papers, like the *Pall Mail Gazette*, provide a weekly issue resembling these. Other reviews are *Nature* (1869), weekly; *Knowledge* (1881), weekly; the *Popular Science Monthly* (quarterly); and *Mind* (1876), quarterly. The articles in the older reviews are generally anonymous; in the newer, it has become usual for the authors to affix their names.

Most of the Brit. magazines or periodicals of more miscellaneous character appear monthly, and their system of management is somewhat similar to that of reviews; but the topics are more varied, and articles are generally shorter, consisting often of tales and novels, appearing as serials continued from number to number. Some of the most popular novels of the present day have been published first in magazines. *Blackwood* was the precursor of half-crown monthly magazines, the most important being *Fraser's Magazine*, established 1830 (discontinued 1882); but in 1859 and 60, several new magazines—*Macmillan's Magazine*, the *Cornhill*, *Temple Bar*, *London Society*, and the *St. James's Magazine*—were started at the cheaper price of a shilling (about 25 cts.). Then came the era of sixpenny (12 cts.) magazines—e.g., *Good Words*, *Quiver* (1860), *Longman's Magazine* (1882), the *Cornhill* (new cheap series), and *English Illustrated Magazine* (1883—imitation of the beautifully illustrated American magazines). In Great Britain are now many weekly periodicals, chiefly of an instructive and amusing kind; price from a penny to threepence

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each (2 to 6 cents). This class of publications received impetus and proper direction by the issue of *Chambers's Journal* and the *Penny Magazine* of the 'Soc. for the Diffusion of Useful Knowledge,' 1832. These weekly sheets are often issued accumulatively in monthly parts under a cover. The rate of payment for writing in the higher-class British reviews is usually £10, 10s. (about \$51.00) per sheet of 16 demy 8vo pages; in the weekly periodicals, half a guinea to a guinea (= \$2.55 to \$5.10) per column is ordinarily paid, but in some instances the price is very much greater, particularly in the case of novels.

The British quarterly reviews and the magazines in course of weekly or monthly publication (1881) numbered 1,097; of these more than 300 were denominational or religious. Of the whole number only about 12 were strictly reviews. Latterly many European periodicals have followed the American example, and made great use of wood-engravings of high order: see WOOD-ENGRAVING. —See Mitchell's *Newspaper Press Directory*, and *Poole's Index* (new ed. 1882).

France possessed as far back as 1665 a critical review, *Journal des Savants*, which, after a lengthened interruption, began again 1816, and holds respectable position as a scientific journal. A number of literary and scientific journals sprang up in the 18th c., e.g., *Nouveau Journal des Savants*, *Journal Littéraire*, *Journal Encyclopédique*, etc. Among the best was the *Magazin Encyclopédique*, begun 1795; and 1819–35 combined with the *Recue Encyclopédique*. One of the most noted critical journals in Europe is published in Paris, *Revue des Deux Mondes*, which began 1829, and has since 1831 appeared fortnightly. In it and the other French periodicals of the same kind, the review form is not so completely preserved as usually in Britain: a proportion of tales, poetry, etc., is admitted, and the names of the contributors are required to be attached to their articles. The *Revue des Deux Mondes* has had many short-lived imitators, more or less identified with different political parties. The principal French reviews of more recent date are the *Revue Contemporaine*, *Athenæum Français*, and *Revue d' Europe*.

In Germany, reviews have taken even a deeper root than in England. The *Göttinger Gelehrte Anzeigen*, the oldest publication of the kind, still preserves a high character. German criticism can, however, hardly be said to have begun before the time of Lessing, who, in conjunction with Nicolai of Berlin, established 1757 the *Bibliothek der schönen Wissenschaften*, and afterward various other journals, characterized by an independence of thought unknown before. The *Allgemeine Literaturzeitung*, founded at Jena 1785, was a periodical of a still higher character, having for contributors the most eminent literary men of the period. When transferred from Jena to Halle, another journal, *Jenaische Allgemeine Literaturzeitung*, sprang up at the former place, under

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the auspices of the celebrated literary circle at Weimar, of whom Goethe was centre. These two periodicals existed till 1848. Of modern German reviews, the *Deutsche Rundschau* and the *Litterarisches Centralblatt* are specimens of two different types. The *Deutsches Museum*, the *Gartenlaube* (the most widely read of German periodicals, with a circulation of nearly 400,000), and *Im Neuen Reich*, are rather magazines than reviews.

Italy had a critical journal, *Giornale dei Litterati*, as far back as 1710, which continued 23 years. A new journal of the same name, founded at Pisa 1771, attained considerable repute. From 1826-30, the *Biblioteca Italiana* and *Antologia di Firenze* were reviews of ability. The scientific periodicals of Italy are creditable. More than 30 periodicals are published in Rome alone—a great increase since the consolidation of the kingdom.

In the United States the history of magazines extends back to Dr. Franklin's *General Mag. and Hist. Chronicle*, 1741, which had brief duration, like many similar periodicals for nearly a century thereafter. The *Amer. Museum*, a valuable repertory of news and current literature, was continued 10 yrs. from 1787; the *Massachusetts Mag.*, 1789, and the *New York Mag.*, 1790, each 7 yrs. Notable among literary weeklies, later, was the *New York Mirror*, 1823-42; among monthlies, *Graham's Mag.*, 1840-50; the transcendental *Dial*, 1840-44; the genial *Knickerbocker*, 1832-60; *Putnam's Monthly*, 1853-57 and 1867-69; and, still continued, the *Atlantic Monthly*, 1857; *Harper's Mag.*, 1850; *Scribner's Monthly*, which became the *Century* 1880, but in 1886 was revived by Scribner's Sons. *Harper's* and the *Century* have a large circulation in England. Other popular monthlies are *Frank Leslie's Mag.* (1875), *Lippincott's*, the *Cosmopolitan*, the *Overland* (San Francisco), and the *Lakeside* (Chicago). Two reprints of foreign periodical literature, *Littell's Living Age* and the *Eclectic Mag.*, began in the same year, 1844. Among weightier periodicals are the *Amer. Register* (1806-10, 17, 1848-51); *Southern Review*, 1828-32; *Amer. Quarterly Register* (Andover), 1829-43; the *Christian Spectator* (New Haven), 1819-38, succeeded by the *New Englander* 1843; *North Amer. Review*, 1815; *Amer. Quarterly Review*, 1827-37; *Southern Quarterly Review*, 1842-52; *Democratic Review*, 1838-52; *Amer. Whig Review*, 1845-52; *International Review*, 1874; *Forum*, 1885. The chief religious denominations have been represented by able reviews, such as the *Panoplist*, 1805-09 (Congl.), which became finally the *Missionary Herald*; the *Christian Examiner*, 1823-70, succeeded by the *Unitarian Review* 1875; the *Princeton Review* (Presb.), begun as the *Biblical Repertory* 1825, with successors variously entitled; *Amer. Biblical Repository*, 1831-50, merged in the *Bibliotheca Sacra* (Congl.); *Methodist Quarterly Review*, 1841; *Universalist Quarterly Review*, 1844; *Amer. Quarterly Church Review* (Episc.), 1848; *Baptist Quarterly*,

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1867. Among literary critical weeklies are the *Literary World* (New York 1847-53, Boston 1870 and the *Critic* (successor to the *Round Table*). According to G. P. Rowell's *Amer. Newspaper Directory*, 1890, the total number of periodicals of all kinds now published in the United States and Canada is 17,760, with net increase of 653 for the year beginning 1889, Apr. 1. The following table gives the varieties and circulation:

	Number of Periodicals.	Total Circulat'n.	Average Circulat'n
Weekly.....	13,164	23,228,750	1,764
Monthly .....	2,191	9,245,750	4,219
Daily .....	1,626	6,653,250	4,091
Semi-monthly.....	280	1,367,250	4,883
Semi-weekly.....	217	389,250	1,793
Quarterly .....	126	323,750	2,569
Biweekly.....	82	215,750	2,631
Bimonthly.....	38	59,250	1,559
Tri-Weekly.....	36	41,000	1,138
	17,760	41,524,000	

Average circulation for all classes is 2,335. Total circulation for year ending 1890, Apr. 1, is 3,481,610,000. The weeklies constitute 75 per cent. of the classes; monthlies 12 per cent.; dailies 9 per cent. The circulation of the monthlies multiplied by 12 months gives 110,949,000 copies, which allows 8 copies in a year to each of the 13,000,000 families of the United States, showing that an average of two out of every three families take a magazine. The periodicals include 25 languages, in about the following numbers of periodicals with different titles: German 740 (10 Canadian), French (in the United States) 41, Scandinavian 101, Spanish 36, Bohemian 22, Hollandish 13, Polish 13, Italian 12, Welsh 6, Hebrew 7, Finnish 4; 2 each of Irish, Swiss, Portuguese, Slavonic, Icelandic, and Chinese; and 1 each of Hungarian, Russian, Armenian, Greek, Gaelic, Volapük, Cherokee, and Creek. For the blind, there is a semi-monthly mag. and a music quarterly, each circulating over 1,500 copies. Of humorous periodicals there are 35 (and 1 in Canada); historical 12; army and navy 12; woman suffrage 9; barbers' 2. Taking the lists by pages of the Directory (about 120 titles to a page), those that pertain to religion occupy 9½ pp.; fraternities and societies 4½ pp.; education and student periodicals 4 pp.; agriculture and related subjects 3 pp.; commerce and finance 2 pp.; medicine 2; law 1; science, engineering, and mechanics 1; temperance and prohibition 1½; juveniles ¾; and ½ p. each for insurance, sporting, architecture and building, music and drama, household, the negro; and ¼ for fashion.—The organs of various manufactures, trades, and mercantile business, are numerous. The fine and decorative arts have 17 elegant journals, and these, with some of the magazines, are unexcelled in wood-engravings and photo-processes. A recent development is the profuse introduction of the pictorial into weekly and daily publications, especially the portraits of individuals, whether noted or notorious.—See **NEWSPAPER.**

## PERIODICITY.

PERIODICITY, in Physiology and Pathology: tendency manifested by various phenomena in living animals to recur, after equal or nearly equal intervals of time. This tendency is so marked, that Bichat, great French anatomist and physiologist, described it under the title *Loi d'Intermittence*. The alternation of sleep and waking, the phenomena of menstruation, and the punctual return of hunger, are some obvious instances of P. in the healthy subject; while less obvious examples are afforded by the apparently regular variations that have been observed in the excretion of carbonic acid from the lungs, and in the number of the pulsations of the heart at different periods of the 24 hours. As is well known by experience, P. may be usefully cultivated and fixed in daily habits. This is exemplified in the case of sleep, and in special degree by the daily relieving of the bowels at a particular hour, a habit in which it is important that all young persons should be carefully instructed, with a view to health and convenience (see PERISTALTIC MOTION).

In certain forms of disease, the law of P. or intermission is distinctly seen. The periodic recurrence of the paroxysms of intermittent fever (or ague) is universally known, though the cause of the P. has hitherto baffled inquiry. Among those who have tried to solve this question are Willis, Reil, Bailly, Roche, Cullen (who ascribes P. to 'a diurnal revolution affecting the animal economy'), and, more recently, Laycock, who refers it to the diurnal atmospheric changes in relation to pressure, electricity, etc.

Ague often gives rise to periodic diseases which present no close analogy to that disease. Thus ague—or, at all events, malaria—is a frequent cause of tic-douloureux, recurring at regular intervals; cases are recorded in which periodical vomiting, weekly, or, in one case, at an interval of ten days, seemed due to it; and a case is on record of a woman who experienced a periodical inflammatory swelling of the right knee, as a sequence of that disorder. Epilepsy is a disease in which the intervals (especially in women) tend to a regular period. Sir Henry Holland (*Medical Notes and Reflections*, 2d ed., 341) records a case in which 'six attacks occurred, with intervals of 16 or 18 minutes between; so exactly recurring, as noted by the watch, that it was impossible to suppose it a mere casualty;' and another case, 'where a spasmodic seizure, more tetanic than epileptic, occurred twice a day for many weeks successively, and almost exactly at the same hours each day.' For many other examples of periodic or intermittent morbid action, see a memoir by Henle, 'On the Course and Periodicity of Disease,' in his *Pathologische Untersuchungen*; and Sir Henry Holland's essay (above referred to) in his *Medical Notes and Reflections*. The most important practical fact in relation to this class of diseases is, that they almost invariably yield to the action of certain medicines, especially bark and arsenic.



PERIODONTAL—PERIOSTEUM.

Exercising a beneficial or mischievous influence, as the case may be, the habit of P. is to be sedulously shunned in every instance likely to prove morally or physically injurious. No more marked example of the injudicious cultivation of P. could be given than in the useless and in all respects injurious practice of periodical blood-letting, formerly prevalent throughout Europe, and abandoned only in recent times.

PERIODONTAL, a. *pěr'î-ô-dönt'äl* [Gr. *peri*, round about; *odous* or *odon'ta*, a tooth]: applied to the lining membrane of a tooth-socket. PERIODONTITIS, n. *pěr'î-ô-dôn-tīt'is*, the inflammation of the lining membrane of a tooth-socket.

PERIÆCI, n. plu. *pěr'î-ě'sī*, or PER'ICÆ'CIANS, n. plu. *-ě'shī-ānz* [Gr. *periōikos*, a dweller around—from *peri*, around; *oikēō*, I dwell]: inhabitants of the earth living in the same latitudes, but in longitudes differing by 180 degrees, so that when it is noon with the one it is midnight with the other.—*Periæci* was also the name given, in anc. Greece, to the original Achaian inhabitants of Laconia by their Dorian conquerors. The P. were not slaves, like the Helots (q.v.); they were merely a vassal population, personally free, cultivating their own ground, and carrying on most of the home and foreign trade of Laconia, but possessing no political rights, incapable of intermarrying with the Dorians of Sparta, or of holding important state-offices, and subjected to a land-tax in token of their dependent condition. They have been—as regards their political position—compared to the Saxons of England after the Norman conquest. The P. must have been very numerous, for they occupied at one time more than 100 cities, several of which were on the coast, whence the whole seaboard of Laconia bore the name of the *Periōikis*; and they produced capital sailors, which doubtless accounts for the anomalous fact of P. being occasionally invested with the command of the Spartan fleet. They also formed a part of the Spartan army. At the battle of Plataea, B.C. 479, there were 10,000 P. present. These dependent Achaians were not, however, all on a dead level of vassalage; they lived in regularly organized communities, where the social distinctions of rank, refinement, and wealth were as marked as elsewhere. Xenophon speaks of 'accomplished and well-born gentlemen' (*kaloi k'agathoi*) among the P. serving as volunteers in the Spartan army; and such artists and men of culture as Lacedæmon produced in all probability belonged to this class. P. existed also in the other Dorian communities of the Peloponnesus.

PERIOSTEUM, n. *pěr'î-ôs'tě-ŭm* [Gr. *periōs'tēon*—from *peri*, around; *ostēōn*, a bone]: the fibrous membrane immediately covering the bone. PER'IOS'TEAL, a. *-äl*, relating to or connected with the periosteum.

## PERIOSTEUM—PERIOSTITIS.

**PERIOS'TEUM:** tough fibrous membrane which surrounds the various bones. It is highly vascular, and is the means by which the outer layers of the shafts and the greater part of the spongy portions of the bones are supplied with blood. 'From the internal surface of the P. also is produced a layer of soft blastema (or plastic fluid in which cells are developed), by means of which additions are made to the exterior of the growing bones. The process of ossification going on in the inner part of this blastema contributes to the thickness of the bone, while a fresh supply is continually being added to the exterior of the blastema, through the medium of the vessels of the periosteum.'—Humphry *On the Human Skeleton*, p. 19. In young bones, this membrane is thick, and, in consequence of the intervening blastema, is very easily detached from the bone; but in the bones of the adult it is less thick and vascular, while its connection with the bone becomes closer, in consequence of the blastema being less; while in aged persons it is very thin, its vessels are scanty, and there is no blastema. Numerous experiments show that the formation of bone is essentially due to the action of this membrane; and that, by transplanting detached portions of P. into muscular or other tissues, bony tissue is generated in those parts. In most cases in which this membrane has become detached in consequence of a wound or of disease, the exposed bone (except in the instance of the skull, which derives most of its nutrient matter from the dura-mater) perishes; but this is not invariably the case. Among its other offices, it serves, by isolating the bone from the surrounding tissues, to prevent the spread of disease from them to it. The shin-bone or tibia is thus indebted to the P. for its ordinary immunity in cases of ulcer in that region. In those parts in which the bone is not so completely isolated from the surrounding tissues, as at the ends of the bones of the fingers and toes, inflammation of the soft parts not unfrequently extends to the bony structure.

**PERIOSTI'TIS:** inflammation of the membrane covering the bone; occurring generally on the surface of thinly covered bones, such as the tibia, clavicles, and cranial bones. Its chief causes are (1) a *syphilitic taint*, in which oval swellings, called *Nodes* (q.v.), are produced; (2) *rheumatism*; and (3) *scrofula*. In the two latter cases, there is a periosteal swelling around the whole circumference or surface of the bone. The affection, especially when due to the first or second of the above causes, is usually accompanied with considerable nocturnal pain. The disease in acute form is treated with leeches, fomentations, and the other ordinary antiphlogistic (or lowering) remedies. In almost all cases, the nocturnal pains are best relieved by doses (five to ten grains) of iodide of potassium, taken three times a day on an empty stomach.

PERIOSTRACUM--PERIPNEUMONIA.

PERIOSTRACUM, n. *pěr'ĩ-õs'trã-kũm* [Gr. *peri*, round about; *õs'trãkon*, a shell]: in *zool.*, the layer of epidermis which covers the shell in most of the mollusca.

PERIPATETIC, n. *pěr'ĩ pã-tět'ĩk* [Gr. *perĩpatēt'ĩkos*, a walker about, belonging to the Peripatetics—from *peri*, around; *patēõ*, I tread or walk]: follower or disciple of Aristotle, either because he walked about as he taught or disputed in the Lyceum in Athens, or because he delivered his lectures in a shaded walk: a great walker: *ironically*, an itinerant teacher or preacher: ADJ. also PER'IPATET'ICAL, a. *-tět'ĩ-kãl*, walking about, as Aristotle did while he taught: pertaining to Aristotle, his philosophy, or followers. PER'IPATET'ICISM, n. *-tět'ĩ-sĩzm*, philosophy of Aristotle.

PERIPATUS, n. *pěr-ĩp'ã-tũs* [Gr. *peripatos*, walking about]: a remarkable genus of worm-like creatures of terrestrial habits, connecting the annulose and articulate types (see ARTICULATA).

PERIPHERY, n. *pěr-ĩf'ěr-ĩ* [F. *périphérie*—from Gr. *perĩphērei'ã*, a circumference—from *peri*, around; *pherõ*, I carry]: the circumference of a circle, ellipsis, or other regular curvilinear figure. PERIPHERIC, a. *pěr'ĩ-fēr'ĩk*, or PER'IPHER'ICAL, a. *-ĩ-kãl*, pertaining to a periphery, or constituting one; in *bot.*, *peripheral* is applied to an embryo curved so as to surround the albumen, following the inner part of the covering of the seed. PERIPHERAL, a. *pěr-ĩf'ěr-ãl*, pertaining to a periphery.

PERIPHRAISIS, n. *pěr-ĩf'rã-sĩs*, or PERIPHRASE, n. *pěr'ĩ-frãz* [Gr. and L. *perĩphrãsis*, circumlocution—from Gr. *peri*, about; *phrãsis*, a speech—from *phrãzõ*, I speak: F. *pérĩphrase*]: the use of more words than is necessary to express an idea; circumlocution. PER'IPHRASE, v. to express the sense of one word by means of several. PER'IPHRASING, imp. PER'IPHRASED, pp. *-frãzd*. PERIPHRASTIC, a. *pěr'ĩ-frãs'tĩk*, or PER'IPHRAST'ICAL, a. *-t'ĩ kãl*, expressing the sense of fewer words by more; circumlocutory. PER'IPHRAST'ICALLY, ad. *-l'ĩ*.

PERIPLAST, n. *pěr'ĩ plãst* [Gr. *peri*, round about; *plastos*, molded—from *plassõ*, I mold]: in *zool.*, the intercellular substance or matrix in which the organized structures of a tissue are embedded.

PERIPNEUMONIA, n. *pěr'ĩp-nũ-mõ'nĩ-ã*, or PER'IPNEU'MONY, n. *-nũ-mõ-nĩ* [Gr. *perĩpneumõ'nĩã*, inflammation of the lungs—from *peri*, about; *pneumõn*, a lung—*pneõ*, I breathe]: inflammation of the membrane which invests the lungs, accompanied with general disturbance of the whole system; remarkably prevalent among horses in s. Africa, in a zone from 20° to 27° s. lat. It is very fatal; and to its prevalence and virulence, Dr. Livingstone is disposed to ascribe the fact that horses, though so abundant in n. Africa, were unknown in the south till introduced by Europeans; this invisible barrier being more insurmountable than mountain ranges, deserts, or rivers. The season during which P. prevails is from Dec. to Apr. Zebras, antelopes, and oxen are liable to

PERIPOLYGONAL—PERISPORE.

it; but no other quadruped suffers so much from it as the horse. The flesh of animals which die of P. is unwholesome, and produces a malignant carbuncle.

PERIPOLYGONAL, a. *pěr'í-pō-líg'ó-nāl* [Gr. *peri*, around, and Eng. *polygonal*]: in *crystallography*, having a great number of sides or angles.

PERIPTERAL, a. *pěr-íp'těr-āl* [Gr. *peri*, around; *pteron*, a wing]: winged all round; surrounded by a single range of columns. PERIPTEROUS, a. *pěr-íp'těr-ūs*, feathered on all sides. PERIPTERY, n. *pěr-íp'těr-ī*, or PERIPTER, n. *pěr'íp-tér*, a temple or edifice surrounded by a wing or aisle formed of columns exterior to the building.

PERISARC, n. *pěr'í-sârk* [Gr. *peri*, round about; *sarx* or *sarka*, flesh]: a general term for the chitinous envelope secreted by many of the hydrozoa.

PERISCIAN, a. *pěr-íš'í-ân* [Gr. *peri*, around; *skia*, a shadow]: having the shadow moving all round in the course of the day. PERISCIANS, n. plu. *-ânz*, or PERISCI, n. plu. *pěr-íš'í-ī*, a name given to the inhabitants of the arctic zones, whose shadows move round at certain times of the year, describing circles during the day.

PERISCOPE, n. *pěr'í-skōp* [Gr. *peri*, around; *skopēō*, I view]: a view on all sides; a general view. PERISCOPIC, a. *-skōp'ík*, viewing on all sides—a term applied to spectacles with concavo-convex glasses, constructed to increase the distinctness of objects when viewed obliquely.

PERISH, v. *pěr'ísh* [F. *périssant*, perishing—from *périr*, to perish: L. *perēō*, I am destroyed, I perish]: to wither and decay; to lose life or vitality in any manner; to come to nothing; to be lost eternally; in *OE.* and *Scot.*, to destroy; to wither. PERISHING, imp.: ADJ. having a tendency to perish; losing life; passing away. PERISHED, pp. *-isht*: ADJ. destroyed; dead. PERISHABLE, a. *-ā-bl*, subject to decay or destruction. PERISHABLY, ad. *-blī*. PERISHABLENESS, n. *-bl-nēs*, liability to decay or destruction. PERISHABLE GOODS, goods which quickly decay or deteriorate, as fruit, fish, and the like.—SYN. of 'perish': to decay; decline; die; pass away; be lost.

PERISOME, n. *pěr'í-sōm'* [Gr. *peri*, about; *sōma*, body]: the coriaceous or calcareous integument of the echinoderms.

PERISPERM, n. *pěr'í-spěrm* [Gr. *peri*, around; *sperma*, seed—from *speirō*, I sow]: the exterior albumen or nourishing matter stored up with the embryo in the seed.

PERISPHERIC, a. *pěr'í-sfěr'ík* [Gr. *peri*, around; *sphaira*, a sphere]: having the form of a ball; globular.

PERISPORANGIUM, n. *pěr'í-spōr-ānj'í-ūm* [Gr. *peri*, round about; *spora*, seed; *anggos*, a vessel]: in *bot.*, the indusium of ferns when it surrounds the sori.

PERISPORE, n. *pěr'í-spōr* [Gr. *peri*, round about; *spora*, seed]: the membrane or case surrounding a spore; the mother-cell of spores in *Algæ*.

## PERISSODACTYLA—PERISTALTIC.

**PERISSODACTYLA**, n. plu. *pēr-īs'sō-dāk'til-ā* [Gr. *perissos*, redundant, unequal; *dak'tulos*, a finger or toe]: section of the order *Ungulata* (q.v.), including those hoofed quadrupeds which have an unequal number of toes, as distinguished from the *artiodactyla*.

**PERISTALTIC**, a. *pēr'ī-stāl'tik* [Gr. *peristal'tikōs*, drawing together all round—from *peri*, around; *stellō*, I send]: a term applied to the peculiar worm-like motion of the intestines by which their contents are gradually forced downward; spiral; worm-like. **PERISTAL'TICALLY**, ad. *-tī-kāl-ŭ*. **PERISTALTIC MOTION**, called also **VERMICULAR** (worm-like) motion, peculiar motion or action of the muscular coat of the intestines, by which the substances contained within it are regularly moved onward. See **ALIMENTARY CANAL**. This action of the intestines is readily seen on opening an animal (e.g., dog, cat, or rabbit) immediately after it has been killed; in which circumstances, it is perhaps exaggerated, from the stimulating action of the cold air; also it may be shown in an abnormally active state, though not altered in character, by subjecting the exposed intestines to the influence of the electro-magnetic machine.

It appears, from observations by Brinton, Todd and Bowman, and others, on recently killed animals, that the peristaltic motion commences at the pyloric third of the stomach (see **DIGESTION**), whence successive waves of contraction and relaxation are propagated downward through the whole length of the intestinal canal. 'In examining a portion of intestine at the moment of its contraction, we perceive a dilatation above it as well as below it; the latter being produced by the protrusion into it of the contents of the now contracted portion of intestine; the former by the relaxation of a previously contracted portion. The rapid succession of these contractions and relaxations gives to the movements of the intestines the appearance of the writhings of a worm, whence they are distinguished by the appellation *vermicular*.'—Todd and Bowman's *Physical Anatomy of Man*, ii. 236. These movements can occasionally be observed during life in the human subject, indirectly in cases of extreme attenuation of the abdominal walls, and directly in wounds of the abdomen, and during certain surgical operations. There are differences of opinion as to the cause of the peristaltic action; thus, Todd and Bowman assert that 'the intestinal movements are partly due to the influence of the stimulus of distention upon the muscular tissue, and partly to the reflex action of the ganglia of the intestinal portion of the sympathetic, stimulated by the contact of the intestinal contents with the mucous membrane;' while Carpenter maintains that 'the intestinal tube from the stomach to the rectum is not dependent upon the nervous centres either for its contractility or for its power of exercising it, but is enabled to propel its contents by its own inherent powers.'

Numerous observations tend to show that this motion

## PERISTERITE—PERISYSTOLE.

has a nearly definite velocity in each individual. Usually the act of defecation takes place with perfect regularity every 24 or (more rarely) every 12 hours, the quantity discharged being almost constant, if the mode of living does not vary. Heberden (*Commentarii*, p. 14) mentions a person who regularly had a motion once a month, and (by way of contrast) another who had twelve motions every day during 30 years, and then seven every day for seven years, and rather grew fat than otherwise. Ponteau (*Œuvres Posthumes*, i. 27) records a case in which there was no movement for more than eight years: such a case is possible, but far from probable.

That the influence of *expectant attention* on the muscular movements of the intestine (and especially of its lower portion) is very great, is shown in various ways. It is, for the most part, thus that *habit* operates in producing a readiness for defecation at one special hour in the day, and that bread-pills and other equally inert substances act on the bowels, if the patient believes them to be purgatives. Dr. Carpenter, in his remarks on 'the influence of expectant attention on muscular movements,' in the chapter of his *Human Physiology* treating 'Of Muscular Movements,' mentions two very striking cases of the kind within his own knowledge.

**PERISTERITE**, n. *pěr-ĩs'těr-īt* [Gr. *peris'tērā*, a pigeon]: a variety of albite of a grayish-white color, exhibiting, when properly cut, a bluish opalescence like the changing hues on a pigeon's neck.

**PERISTOME**, n. *pěr'ĩ-stōm* [Gr. *peri*, about; *stoma*, a mouth]: in *bot.*, the ring of bristles situated around the orifice or mouth of the seed-vessels in mosses; the simple or double membrane closing the mouth or opening in the theca of mosses, which membrane becomes divided into a definite number of laminæ, termed teeth, after the removal of the lid in the ripe state; in *zool.*, the space between the mouth and the margin of the calyx in vorticella, or between the mouth and the tentacles in a sea-anemone; the lip or margin of the mouth of a univalve shell. **PERISTOMATIC**, a. *pěr-ĩ-stō-măt'ík*, of or pertaining to a peristome; in *bot.*, having cells surrounding a stoma.

**PERISTREPHIC**, a. *pěr'ĩ-strěf'ík* [Gr. *peri*, around, and *strephō*, I turn]: rotating or revolving—applied to the paintings of a panorama.

**PERISTYLE**, n. *pěr'ĩ-stil*, or **PER'ISTYL'IUM**, n. *-stíl-ĩ-ũm* [Gr. *peris'tūlon*, a colonnade round a temple—from *peri*, around; *stulos*, a column or pillar]: a range of columns around the interior of a building or square; a building surrounded with columns.

**PERISYSTOLE**, n. *pěr'ĩ-sĩs'tō-lē* [Gr. *peri*, around; *sus'tolē*, contraction—from *sustellō*, I draw together]: in the beating of the heart, the interval of time between the *systole* or contraction, and the *diastole* or dilatation, of the heart.

## PERITHECIUM—PERITONEUM.

**PERITHECIUM**, n. *pěr'ĩ-thě'shĩ-ũm* [Gr. *peri*, around; *thēkē*, a box or case]: in *bot.*, the envelope surrounding the masses of fructification in some fungi and lichens; a conceptacle in cryptogams, containing spores, and having an opening at one end.

**PERITOMOUS**, a. *pěr-ĩt'ō-mũs* [Gr. *perit'ōmos*, cut off all round about—from *peri*, around; *tomē*, a cutting—from *temnō*, I cut or cleave]: in *min.*, cleaving in more directions than one parallel to the axis.

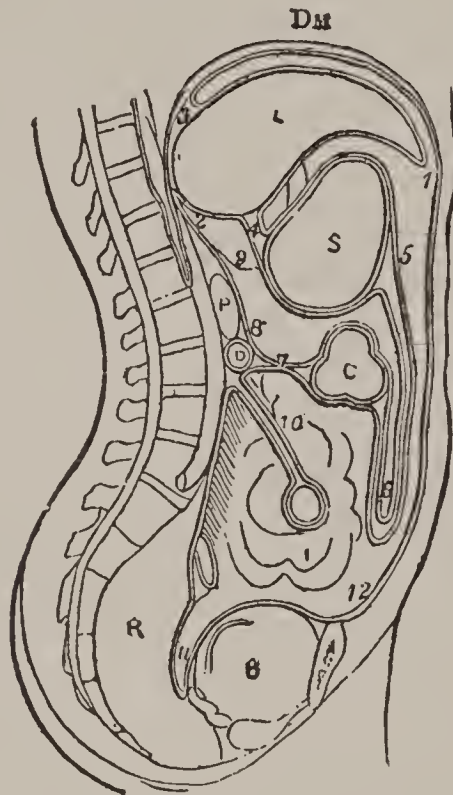
**PERITONEUM**, or **PERITONÆUM**, n. *pěr'ĩ-tō-ně'ũm* [Gr. *peritonai'on*, what is stretched round or over—from *peri*, around; *teinō*, I stretch]: thin membrane which lines the whole internal surface of the abdomen, and envelops more or less completely the several parts of the viscera, retaining them in their proper places, and at the same time allowing them to move freely when required (see below). **PERITONE'AL**, a. *-ně'ũl*, pertaining to the peritoneum.

**PERITONE'UM**: serous membrane inclosing the abdominal and pelvic viscera, and, like all membranes of this class, a shut sac, which, however, in the female is not completely closed, as the Fallopian tubes communicate with it by their free extremities. The P. more or less completely invests all the viscera lying in the abdominal and pelvic cavities, and is then reflected on the walls of the abdomen, so that there is a visceral and a parietal layer. Numerous folds are formed by the visceral layer as it passes from one organ to another. They serve to hold the parts in position, and at the same time inclose vessels and nerves. Some of these folds are termed *Ligaments*, from their serving to support the organs. Thus, we have ligaments of the liver, spleen, bladder, and uterus, formed by peritoneal folds. Others are termed *Mesenteries* [from the Gr. *meson*, the middle, and *enteron*, the intestine], and connect the intestines with the vertebral column. They are the Mesentery (q.v.), proper which has been already described, the ascending, transverse, and descending mesocolon, and the mesorectum. (The mesentery and transverse mesocolon are shown in the figure). Lastly, there are folds called *Omenta*, which proceed from one viscus to another. They are three in number—viz., the *Lesser* or *Gastrohepatic Omentum*, which extends from the under-surface of the liver to the lesser curvature of the stomach (No. 4 in fig.); the *Gastro-splenic Omentum*; and the *Great* or *Gastro-colic Omentum* (Nos. 5 and 6 in fig.), which consists of four layers of peritoneum, the two which descend from the stomach, and the same two returning upon themselves, and ascending as high as the transverse colon, where they separate, and inclose that organ. These separate layers are traced easily in the young subject, but in the adult they are more or less blended. The great omentum always contains some adipose tissue, which, in persons inclined to corpulency, often accumulates to an enormous extent. Its use appears to

## PERITONITIS.

be (1) to protect the intestines from cold by covering them anteriorly as with an apron, and (2) to facilitate their movement upon each other during their vermicular action.

Like all the serous membranes, the P. readily takes on inflammation from various exciting causes: this inflammation is termed Peritonitis (q.v.).



**The Reflections of the Peritoneum :**

**Dx**, the diaphragm; **S**, the stomach; **C**, the transverse colon; **D**, the duodenum; **P**, the pancreas; **I**, the small intestine; **R**, the rectum; **B**, the urinary bladder; 1, the anterior, and 2, the posterior, layer of peritoneum; 4, the lesser omentum; 5 and 6, the greater omentum; 7, the transverse mesocolon; 10, the mesentery encircling the small intestine; 11, the recto-vesical fold; 12, the anterior layer traced upward upon the internal surface of the abdominal walls to the point (I) with which the examination commenced.—From Wilson's *Anatomist's Vade-Mecum*.

**PERITONITIS:** inflammation of the peritoneum or serous membrane inclosing the abdominal and pelvic viscera; a disease which may be either acute or chronic.

*Acute P.* generally presents well-marked symptoms. It commences sometimes with a chill, but severe pain in the abdomen is usually the first symptom. The pain is at first sometimes confined to particular spots (usually in the lower abdomen), but it soon extends over the whole abdominal region. It is increased, on pressure, to such an extent that the patient cannot even bear the weight of the bedclothes; and to avoid, as far as possible, internal pressure upon the peritoneum, he lies perfectly still, on his back, with the legs drawn up, and breathes by means of the ribs, in consequence of the pain occasioned by the descent of the diaphragm in inspiration. The breathing is naturally shallow in these cases, and less air being admitted at each movement of



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respiration, the number of those movements is increased: there are perhaps 40 or even 60 respirations executed in a minute, instead of 18 or 20. The pulse is usually very frequent, often 120 or more in the minute, and small and tense, though occasionally strong and full at the commencement of the attack. After the disease has continued a certain time, the belly becomes tense and swollen; the enlargement being caused at first by flatus, afterward also by the effusion of fluid, as may be ascertained by percussion and auscultation.

The progress of the disease is in general rapid. In fatal cases, death takes place usually within a week, often sooner. The symptoms indicating that the disease is advancing toward a fatal termination are great distention of the abdomen, a very frequent and feeble pulse, a pinched and extremely anxious appearance of the face, and cold sweats.

P. may arise from any of the ordinary causes of inflammation, such as sudden change of temperature (especially the combined effects of cold and wet on the surface of the body), excessive use of stimulating fluids, suppression of long-standing discharges, translation of gout and rheumatism, etc. It is frequently the result of local violence, and of wounds penetrating the peritoneal sac, including various surgical operations. Besides the above causes, there are two which give rise to special varieties of peritonitis: 1, contagion or infection, which often prevails epidemically, and produces great mortality among women after child-birth, giving rise to puerperal P., one of the most perilous accompaniments of the dangerous disorder known as Puerperal Fever (q.v.): 2, perforation of the stomach, bowels, gall bladder, urinary bladder, etc., by which their contents are allowed to escape into the peritoneal cavity, where they excite the most violent inflammation. P. from *perforation* is characterized by the suddenness of the attack; intense pain, incapable of mitigation by medicine, all at once arising in some part of the abdomen, the whole of which soon becomes tender in every part. This form of the disease is generally fatal, death usually ensuing within two days, and sometimes within a few hours. Perforation of the small intestine, in consequence of ulceration of its glands, is common in continued (typhoid) fever, and sometimes occurs in phthisis. That apparently useless structure, the vermiform appendage of the cæcum, is a comparatively frequent seat of perforation. Sometimes it is the stomach which is perforated, and in these cases the patients are usually unmarried women (especially domestic servants), who had previously appeared in good health, or at most had complained of slight dyspepsia. The only disease with which P. is likely to be confounded by the well-educated practitioner is a peculiar form of hysteria; but the age and sex of the patient, the presence of hysteria in other forms, and the general history of the patient and of her symptoms, will almost always lead to a correct diagnosis of the disease.

## PERITONITIS.

The treatment in this dangerous disease should be exclusively in the hands of the medical practitioner. Opium may be given freely, not merely to guard against the purgative action of calomel (when that is administered), but also with the view of securing sleep to the patient, and quiet to the inflamed membrane. The patient must be kept on low diet, unless indications of sinking appear. In P. from perforation, the only remedy is opium, in large and repeated doses, to keep the bowels perfectly at rest, in order to promote the formation of adhesion, by which alone the patient can be possibly saved. For the same reason, perfect rest must be insisted on, and even drinks forbidden, thirst being allayed by the application of ice to the tongue.

*Chronic P.* occurs in two forms, which differ in their origin and degree of fatality, but are very similar in symptoms. In the first, the inflammation is of the ordinary character, and though the disease sometimes originates spontaneously, it is more frequently the sequel of an imperfectly cured acute attack; in the second, it depends on granules (supposed by Louis and most writers to be tubercles) lying in countless numbers in the serous membrane, and serving as a constant source of irritation. The second form is confined almost, if not entirely, to persons of a scrofulous constitution.

The symptoms of chronic P. are more obscure than those of the acute form. There is abdominal pain, often slight, and not always constant, increased by pressure, or sometimes felt only when pressure is made. The patient complains of a sensation of fulness and tension of the belly, though its size is not visibly increased; of a loss of appetite; and of nausea and vomiting; and the bowels are usually more or less out of order. After a time, the abdomen enlarges, and becomes tympanitic, or more or less filled with fluid; and death gradually ensues from debility and emaciation, unless the fatal issue is accelerated by an acute inflammatory attack. It is not always easy to determine, during life, whether the disease belongs to the first or second form. When its origin cannot be traced to a preceding acute attack, to local abdominal injury, or to chronic affections of the abdominal viscera, there is strong reason to believe it to be of the granular, or, as it is commonly called, the tubercular form, especially if the general constitution and the hereditary tendencies of the patient point in the same direction.

Little can be done in the way of treatment, especially in the tubercular form, further than mitigating the most distressing symptoms, and possibly retarding the final issue. The frequent application of a few leeches to the abdomen, followed by warm poultices, occasional blisters, attention to the bowels, which, if costive, should be acted on by gentle laxatives, and a mild, nourishing, but unstimulating diet, are more likely to be of service than more energetic remedies.

PERITROCHIUM--PERIWINKLE.

PERITROCHIUM, n. *pěr'ĩ-trō'kĩ-ũm* [Gr. *peritrōchos*, circular, round—from *peri*, around; *trochos*, a wheel—from *trechō*, I run]: in *mech.*, a wheel fixed upon an axle, so that both can be moved by a rope passing round the wheel; one of the mechanical powers called the *wheel and axle*.

PERITROPAL, a. *pěr-ĩ'rō-pāl* or *pěr'ĩ-trō'pāl* [Gr. *peri*, around; *tropē*, a turning—from *trepō*, I turn]: rotatory; circuitous; in *bot.*, applied to the axis of a seed perpendicular to the axis of the pericarp to which it is attached.

PERITYPHLITIS, n. *pěr'ĩ-tĩf-lĩ'tĩs* [Gr. *peri*, round about; *tuphlos*, blind]: inflammation around the cecum.

PERIVASCULAR, a. *pěr'ĩ-vās'kũ-lěr* [Gr. *peri*, round about; L. *vasculum*, a small vessel—from *vas*, a dish]: applied to canals which surround and inclose the blood-vessels of the brain and spinal cord; also called *lymph channels*, from their containing lymph.

PERIVISCERAL, a. *pěr'ĩ-vĩs'sěr-āl* [Gr. *peri*, around; L. *viscēra*, the internal organs]: applied to the space surrounding the viscera.

PERIWIG, n. *pěr'ĩ-wĩg* [a corruption, under the influence of E. *wig*, of F. *perruque*, a lock or tuft of hair, a wig—from It. *parruca*: Dut. *peruik*; Ger. *perrücke*, a wig: perhaps connected with Sp. *peluce*; L. *pellucus*—from *pellis*, a skin]: a kind of close cap formed of an intertexture of false hair, worn by men to conceal baldness; a wig or peruke: V. to dress with false hair. PER-IWIGGING, imp. PER-IWIGGED, pp. *-wĩgd*.

PERIWINKLE, n. *pěr'ĩ-wĩng'kl* [AS. *pinewinclā*, the pinwinkle: Scot. *peerie*, small, little; AS. *wincle*, a whelk], (*Littorina*): genus of gasteropodous mollusks of order *Pectinibranchiata* and family *Littorinidæ*, having a proboscis-shaped head, a foot of moderate size, a single gill, and a rudimentary siphonal canal; the shell turbinate, thick, with few whorls, and no nacreous lining; the operculum of few whorls. A very well-known species is the COMMON P. (*L. littorea*), a kind of sea-snail, a mollusk most abundant on some rocky British coasts, living in the lowest zone of sea-weeds between tide-marks, and feeding on fuci, etc. It is oviparous. No mollusk is more generally collected and used for food. Children are usually employed in collecting it. It is boiled in the shell, and so sold, often on the streets, and chiefly to the poorer classes, though few mollusks are more pleasant. It is calculated that 1,900 tons, value £15,000, are annually consumed in London alone. It is called *Wilk*, *Wulk*, or *Whulk* in Scotland, but is quite different from the *Whelk* (q.v.) of the English, notwithstanding the sameness of name. There are other common species, *L. neritoides* and *L. rudis*, less esteemed. *U rudis* is viviparous, and the shells of the young within the mantle of the parent often make it gritty and unpleasant to eat.—In the U. S., the name P. is given to various whelks or conch-shells destructive to oysters.

PERIWINKLE—PERJURE.

PERIWINKLE, n. *pĕr'ĭ-wĭng'kl* [F. *pervenche*—from L. and It. *pervinca*. the plant periwinkle—from L. *vincio*, I bind]: a creeping or binding plant—probably so called from its growth being similar to a tangled mass of twigs; *Vinca*, genus of plants of nat. order *Apocynaceæ*, having a 5-cleft calyx, and a salver-shaped corolla bearded at the throat, with five obliquely truncated segments. The leaves are opposite and evergreen; the flowers grow singly or in pairs from the axils of the leaves. The LESSER P. (*V. minor*), native of many parts of Europe, growing in woods and thickets, is a half-shrubby plant with trailing stems, rooting at their extremities, ovato-lanceolate leaves, and pale-blue—sometimes white or reddish-purple—salver-shaped flowers. The GREATER P. (*V. major*), which has much larger flowers and ovato-cordate ciliated leaves, is native of s. Europe, and is found in a few places in s. England. Both these species are very frequently planted in shrubberies and gardens, rapidly cover unsightly objects with pleasing green foliage, and produce their beautiful flowers at almost all seasons of the year, even in winter if the weather is mild. The HERBACEOUS P. (*V. herbacea*), Hungarian species, is remarkable for abundance of flowers. The YELLOW P. (*V. lutea*) is native of s. parts of N. America. The ROSE-COLORED P. (*V. rosea*), native of Madagascar, is a favorite greenhouse plant.—The name P. was formerly *Perwinké*. Chaucer speaks of the 'fresh perwinké rich of hue.' It is probably from the French *pervenche*, and that from the Latin *vinca*.

PERJURE, v. *pĕr'jûr* [F. *parjurer*, to perjure: F. *parjure*, OF. *perjure*, perjured—from L. *perjurus*, a perjured person: L. *perjuriûm*, a false oath—from *per*, through; *jûro*, I swear]: to swear falsely; in a *court of justice*, to swear to as truth that which is known to be false. PER'JURING, imp. PER'JURED, pp. *-jûrd*: ADJ. having sworn falsely, as a witness in a court of justice—usually followed by a *pron.* and *self*, as, he perjured himself. PER'JURER, n. *-ĕr*, one who swears falsely. PER'JURY, n. *-jûr-ĭ*, act or crime of wilfully giving false evidence on any material point in a court of justice or before other constituted authority, when put on oath or affirmation. If the falsehood occurred as to some trifling or immaterial fact, no crime is committed. Moreover, it is necessary, in proving the crime, that at least two persons should be able to testify to the falsehood of the matter, so that there might be a majority of oaths on the matter—there being then two oaths to one. But this rule is satisfied though both witnesses do not testify to one point. The perjury must also have taken place before some court or tribunal which had power to administer the oath: see OATH. Though in some courts affirmations are allowed instead of oaths, yet the punishment for false affirmation is made precisely the same as for false swearing. The punishment for perjury was, before the Conquest, sometimes death or cutting out

## PERK—PERKINS.

the tongue; but latterly it was confined to fine and imprisonment, and at present the latter is the only punishment, with the addition of hard labor. The crime of Subornation of Perjury—i.e., the persuading or procuring a person to give false evidence—is also punishable as a distinct offense.

PERK, a. *pérk* [W. *perc*, trim, neat; *percu*, to trim, to smarten: comp. Low Ger. *prick*, smart, fine; Icel. *sparkr*, lively: perhaps connected with *pretty*]: smart; trim; brisk; airy: V. to make trim or smart; to hold up the head with affected smartness; in *OE.*, to dress; to prank. PERK'ING, imp. PERKED, pp. *pérkt*. PERKY, a. *pérk'í*, pert; jaunty; trim: same as PERT, which see.

PERKIN, n. *pérk'in*: a kind of weak cider, made by steeping the refuse pomace in water; ciderkin.

PERKINS, *pér'kinz*, ELISHA: physician: 1741, Jan. 16—1799, Sep. 6; b. Norwich, Conn. He began the practice of medicine with his father at Plainfield, Conn. He invented, about 1796, some instruments which he named metallic tractors, for the cure of local pains, inflammations, and rheumatism. The tractors, he claimed, were of peculiar and secret composition, but it is asserted that one was of iron, the other brass; they were three inches long, and pointed. In use, they were drawn downward over the affected part of the patient for 20 minutes. The wonder is that many learned men in the United States and abroad approved the process. It was known as 'Perkinsism;' and 12 physicians in Copenhagen tested it, and published a volume in its favor, giving details of its effects. Dr. P.'s son published a book, in London, introducing the method; and there it inspired so much faith that a Perkinsian institution was opened, of which Lord Rivers was president. Recommendations were signed by many physicians and clergymen, and thousands of cures published. Heated discussions arose, and a satire, *Terrible Tractoration*, was put forth by Thomas G. Fessenden, in defense of the tractors. The history of this supposed remedy belongs doubtless among the many illustrations of the power of the mental state over the physical. Dr. P. invented also an antiseptic, and visited New York 1799 to test it on yellow fever; but fell a victim to that disease.

PERKINS, JACOB: inventor: 1766, July 9—1849, July 30; b. Newburyport, Mass. While a goldsmith in his native place, he invented a process of plating shoe-buckles; later, made dies for the Mass. copper coins; about 1795, designed a machine for cutting and heading nails; introduced steel-plates for bank-notes, with the purpose of preventing counterfeits; resided in Boston, New York, and Philadelphia; and, 1818, went to England, getting a contract to engrave plates for the Bank of Ireland. There he carried on a large manufacturing business, labored to perfect steam-machinery, invented a method of transferring steel-engravings from one plate to another, and devised a bathometer to measure depth of

## PERKINS—PERM.

water, a pleometer to determine the speed of vessels, and a steam gun able to penetrate 11 one-inch pine planks, with a feeding attachment, delivering 1,000 balls per minute. He received silver and gold medals from the London Soc. of Arts. He died in London.

PERKINS, JUSTIN, D.D.: missionary: 1805, Mar. 12—1869, Dec. 31; b. Springfield, Mass.; son of a farmer. He graduated at Amherst 1829; was at Andover Theol. Seminary two years, and tutor at Amherst one year. Offering himself to the Amer. Board of Missions, he was sent to the Nestorians of Persia; and 1834 founded the mission at Oroomiah. He translated the Bible and other books into the native language, wrote a commentary on Genesis and Daniel, and was active in establishing mission schools. In 1842 he visited this country with the Nestorian bp., Mar Yohannan, who was an early adherent. The next year, returning to his field, he accompanied a deputation to the Persian capital, and successfully remonstrated against the persecutions in progress. Again he visited his native land 1858; and 1869, exhausted by his labors, made his third visit, only to die at Chicopee, Mass. His devoted and eminent mission work extended through 35 years. His books in English were: *A Residence of Eight Years in Persia* (1843); *Mission Life in Persia* (1861).

PERKINS, THOMAS HANDASYD: philanthropist: 1764, Dec. 15—1854, Jan. 11; b. Boston. Trained in his father's mercantile business, he became partner with his brother James in San Domingo trade, and, after visiting ports on the Pacific, in trade with the n.w. coast, Canton, and Calcutta, acquiring great wealth and retiring 1822. He was in the Mass. legislature for about 18 years, from 1805; was lieut.col. of militia; and, 1827, projected the first railway in the United States, the Quincy. His house and grounds, worth \$50,000, he gave to the Perkins Institution for the Blind, contributed largely to the Mass. Gen. Hospital, the Merchants' Library Assoc., the Boston Athenæum, and was active in promoting the Bunker Hill and Washington monuments. His mother, Elizabeth (Peck) P., founded the Boston Female Asylum. He died in Brookline, Mass. A memoir of his life, including extracts from his diaries and sketches of travel, was pub. by Thomas G. Cary. 1856.

PERKIN WARBECK: see HENRY VII.

PERLEBERG, *pěr'lā-běrh*: town of Prussia, province of Brandenburg, on the Stepnitz, with woolen and machine manufactures, tanneries, etc. Pop. 7,900.

PERM, *pěrm*: most eastern govt. of European Russia; bounded e. by Siberia, n., w., and s. by the govts. of Vologda, Viatka, and Orenburg respectively; 128,210 sq. m.—more than the area of Italy. Pop. (1897) 3,003,208. P. is divided by the Ural Mountains into two unequal parts, of which the smaller portion is on the e. or Siberian side of mountains, though, for administrative

## PERM.

purposes, it is reckoned as a part of European Russia. About three-fourths of the govt. are occupied by the Ural range, which in some places reaches the height of 4,000 ft.; but which slopes so gradually toward the plain, that the traveller reaches the summits before he is aware that he has made any unusual ascent. About two-thirds of the entire surface, comprising all the n. districts, are covered with forests, one-tenth of the area is in meadows, and about the same extent is under cultivation. The more important rivers belong to the systems of the Volga and the Ob. The Kama, together with the Tshousovaia and other affluents from the Ural Mountains, flow s.w., join the Volga, and thus form an important means of communication between the mining districts of P. and Europe. The Tura, the Sosva, and the Losva communicate with the Ob; and access is opened to the White Sea and the Arctic Ocean by the rivers Dwina and Petchora. The climate is healthful, though rigorous. At the end of July, the nights are cold; in the middle of Sep., falls the first snow. In Nov., when the whole face of nature is covered with snow, the transport of goods by sledges is busily carried on everywhere. In Jan., the cold is so great that quicksilver sometimes freezes. At the end of Mar., the snow begins to melt, and before the middle of May, though the cold is still great, the country is clothed in the green of early spring. The chief products are gold, copper, magnetic iron ore, rock-crystal, jasper, agate, topaz, porphyry, malachite, porcelain clay, salt (obtained from salt springs), coal, alabaster, marble, etc., and diamonds in small quantities. The inhabitants are chiefly Russians, but there are also numbers of Tartars, Bashkirs, and Finns. The agricultural produce consisting chiefly of corn, vegetables, flax, and hemp, is more than sufficient for local consumption, and is exported to some extent to the neighboring govts. The immense forests of the country yield wood for fuel, and timber for construction of the barges which, during summer, are floated down the rivers, freighted with products of the mines. Three-fourths of the govt. are covered by forest; hardly more than one-twelfth is yet under the plow. The numerous works and factories employ more than 100,000 hands, and recently their annual produce was estimated at nearly \$30,000,000, of which a third was the value of iron. Here, also, is a platina mine, said on good authority to be the richest in the world. The iron of P. is famous all over Europe. The commerce of the govt. is considerable. The fair of Irbit (q.v.) is, after that of Nijni-Novgorod, the most important in the Russian empire. The transit trade, however, is much greater than the local trade. The great highway from Siberia to European Russia passes through P., and the govt. communicates by means of the Volga, Petchora, and the Ob, with the Baltic, White, and Caspian Seas. The central administration of mines has its seat in Ekaterinburg.

## PERM—PERMEATE.

P. was a portion of anc. Biarmia, inhabited in earliest historical times by Finnish tribes, and even then famous for its commerce, especially with Asia. In the 11th c., it became connected commercially with the principality of Novgorod, which, little by little, conquered and took possession of the country. At the close of the 15th c., both it and Novgorod were annexed to the territories of the Prince of Moscow, and about the same time the Christian religion was introduced.

PERM: town of European Russia, cap. of the govt. of P.; on the Kama, 1,357 m. e.s.e. of St. Petersburg; founded 1729, under the name of the Egotinsky copperwork, the first colony in the govt. of P. Its own commerce is not important, but it is the seat of extensive transit trade. Here goods floated down the Tshousovaia from the Ural Mountains are transferred to larger vessels, and forwarded by the Kama and Volga past Nijni-Novgorod and Rybinsk, thence to St. Petersburg. Goods from the sources of the Kama, metals, corn, tallow, and leathers, as well as Siberian and Chinese articles, are sent from P. to the Russian interior, and to Europe generally. Near the town is a large cannon-foundry, possessing one of the largest steam-hammers in the world. Pop. (1885) 32,909; (1890) 39,750; (1897) 45,403.

PERMANENT, a. *pér'mă-něnt* [F. *permanent*—from L. *permānens* or *permānen'tem*, remaining, enduring—from *per*, through; *manĕō*, I remain or last: It. *permanente*]: of long continuance; durable; continuing in the same state without change. PER'MANENTLY, ad. -*lĭ*. PER'MANENCY, n. -*nĕn-sĭ*, or PER'MANENCE, n. -*nĕns* [F.—L.]: continuance in the same state without change; duration. PERMANENT WAY, the bed or superstructure on which the rails are laid in a finished railway.—SYN. of 'permanent': constant; lasting; enduring; fixed; abiding; continuing; persistent.

PERMANGANATE, n. *pér-măn'gă-năt* [*per*, and *manganate* (see MANGANESE)]: a compound of permanganic acid with a base, one of which enters into Condry's disinfectant. PER'MANGAN'IC ACID, -*găn'ĭk*, the highest oxidized form of manganic acid.

PERMEATE, v. *pér'mě-ăt* [L. *permĕātus*, passed through or penetrated—from *per*, through; *mĕō*, I go or pass]: to penetrate and pass through a substance without causing any rupture or displacement of its parts; to pass through the pores of a body. PER'MEATING, imp. PER'MEATED, pp. PER'MEA'TION, n. -*ă'shŭn*, the act of passing through the pores or interstices of a body. PER'MEABLE, a. -*ă-bl* [F.—L.]: that may be passed through, as water through a porous body, or as light through glass. PER'MEABLY, ad. -*blĭ*. PER'MEABIL'ITY, n. -*bĭl'ĭ-tĭ*, the quality or state of being permeable.



## PERMIAN.

PERMIAN, *pér'mĭ-an* (OR MAGNESIAN LIMESTONE, OR DYAS) GROUP: lower division of the New Red Sandstone rocks, which were separated, chiefly on paleontological grounds, from the upper portion, and being, 1841, without a collective name, were called P. by Murchison, because he found them largely developed in that portion of Russia which composed the anc. kingdom of Permia. The name Magnesian Limestone is given to them because of the predominant deposit; and Dyas has been proposed by some German geologists, to correspond with Trias, the name universally accepted for the upper section of the New Red Sandstone series.

The Permian strata occupy in Russia an area twice the size of France, and contain an abundant and varied suite of fossils. They are largely developed also in Germany, and as they have been there carefully studied, and described by numerous geologists, the rocks of that country may be considered types of the group. They have been thus grouped: 1. Bunterschiefer. 2. Zechstein. 3. Kupferschiefer or Mergel. 4. Rothe-todtliegende.

The Bunterschiefer consists of red and mottled marl and sandstone, which have been separated from the Triassic Bunter Sandstein, because of the occurrence in them of fossils which have a paleozoic facies. The Zechstein is chiefly a compact limestone with beds of colored clays, and cellular magnesian limestone. The well-known Stinkstein belongs to this series; it is a dark-colored and highly bituminous limestone, which gives out an offensive odor when struck or rubbed. The name Zechstein (literally, minestone) was given to these beds because they must be mined or cut through to reach the Kupferschiefer below. This latter is a marl slate, richly impregnated with copper pyrites, for which it was extensively wrought. It contains numerous beautifully preserved fossil fish belonging to the genera *Palæoniscus*, *Cœlacanthus*, *Platysorus*, etc. The strange name of Rothe-todtliegende (red dead-layers) was given to a large deposit of red sandstone and conglomerate, by the miners, because the copper obtained from the beds above died out when they reached these red rocks.

The succession of rocks given by Murchison as occurring in Permia are easily correlated with those of Germany. They are: (1) conglomerates and sandstones, containing the remains of plants; (2) red sandstones and shales, with copper ore and vegetable remains; (3) sandstones, grits, and fossiliferous limestones, with interstratified beds of marl and gypsum, the marls occasionally containing plants, also seams of impure coal.

In England, the P. rocks are somewhat extensively developed in Durham, where they have been described by Sedgwick and King. From this county, they continue in a narrow strip bordering the Carboniferous beds down the centre of England, until they are lost near Nottingham. In Cheshire, Shropshire, Stafford, and Warwick, they underlie the salt-bearing Triassic rocks. The Durham strata are grouped as follow:

## PERMISSION—PERMUTE.

- |  |   |                       |
|--|---|-----------------------|
| 1. Concretionary and amorphous limestone,        | } | = Bunterschiefer.     |
| 2. Brecciated and pseudo-brecciated limestone,   |   |                       |
| 3. Fossiliferous limestone, . . . . .            | } | = Zechstein.          |
| 4. Compact limestone, . . . . .                  |   |                       |
| 5. Marl slate, . . . . .                         |   | = Kupferschiefer.     |
| 6. Inferior various-colored sandstone, . . . . . |   | = Rothe-todtliegende. |

The fractured bones and teeth of saurians, found in the basement bed of the sixth group, were considered the earliest evidence of the existence of reptiles, until the discovery of the Archegosaurus in the Carboniferous rocks.

The known organic remains of this period are neither remarkable nor abundant. Many paleozoic forms became extinct within this period; among them are the remarkable *Sigillaria* and the *Neuropteris* of the coal beds, the well-known brachiopod, *Producta*, and several genera of heterocercal-tailed fish. Some new forms appear, especially the labyrinthodont reptiles, which begin in the upper Carboniferous beds, increase in the P., and reach their maximum in the Triassic group.

**PERMISSION**, n. *pér-mísh'ün* [F. *permission*—from L. *permissiōnem*, leave—from *permis'sus*, suffered to pass through—from *per*, through; *missus*, sent—from *mitto*, I send: It. *permissiōne*]: leave, license, or liberty granted; allowance. **PERMIS'SIVE**, a. *-mísh'sív*, not hindering; granting liberty; suffered without hindrance; allowing by statute, but not enforcing. **PERMIS'SIVELY**, ad. *-lí*. **PERMIS'SIBLE**, a. *-sí-bl*, that may be permitted or allowed. **PERMIS'SIBLY**, ad. *-blí*. **PERMISSIVE BILL** (see **LOCAL OPTION: TEMPERANCE**).

**PERMIT**, n. *pér'mít* [L. *permitterē*, to let through, to allow—from *per*, through; *mitterē*, to let go, to send: It. *permettere*: F. *permettre*]: a written license or permission by the custom-house authorities, showing that the duties on certain goods that are removed have been paid; leave: V. *pér-mít'*, to allow without command; to give leave or liberty to without authorizing or approving; to concede. **PERMITTING**, imp. **PERMITTED**, pp.—**SYN.** of 'permit, v.': to allow; grant; bestow; let; admit; suffer; tolerate.

**PERMUTE**, v. *pér-mūt'* [F. *permuter*—from L. *permutārē*, to change or alter completely—from *per*, through; *mūto*, I change: It. *permutare*]: to change the order or arrangement of, as letters or things. **PERMUTING**, imp. **PERMUTED**, pp. **PERMUTABLE**, a. *-tā-bl*, that may be changed the one for the other. **PERMUTABLY**, ad. *-blí*. **PERMUTABLENESS**, n. *-bl-nēs*. **PERMUTATION**, n. *pér-mū-tā'shūn* [F.—L.]: the successive changing or varying the arrangement of *letters* or *things* in every possible order: in *math.*, rearrangement of objects in line according to a change in their order; thus differing from *Combination* in *math.*, which is a selection of a number of objects from a given set of objects, without any regard to the order in which they are placed. The objects are called elements, and the combinations are divided into classes, according to the number of elements

## PERN—PERNAMBUCO.

in each. Let the given elements be the four letters  $a, b, c, d$ ; the binary combinations, or selections of two, are  $ab, ac, ad, bc, bd, cd$ —six in all; the combinations of three are  $abc, abd, acd, bcd$ —four in all; while there is only one combination of four—namely,  $abcd$ .

Permutation has reference to the order of arrangement; thus, the two elements,  $a$  and  $b$ , may stand  $ab$  or  $ba$ , so that every combination of two gives two permutations; the three elements,  $a, b$ , and  $c$ , may stand  $abc, acb, bac, bca, cab, cba$ , one combination of three thus affording six permutations. The combinations of any order with all their permutations are called the *Variations*. Formulas are given in works of algebra for calculating the number of permutations or combinations in any given case. Suppose seven lottery-tickets marked 1, 2, 3, to 7, and that two are to be drawn; if it is asked, how many possible pairs of numbers there are, this is a question of the number of combinations of seven elements, *two* together, which is found to be 21. If we want to know how many times the same seven persons could sit down to table together with a different arrangement each time, this is to ask how many permutations seven objects admit of, and the formula gives  $7 \times 6 \times 5 \times 4 \times 3 \times 2 = 5,040$ . The theory of probabilities is founded on the laws of combination. Thus, in the case of drawing two tickets out of seven, since there are 21 possible pairs, the chance or probability of drawing any particular pair is 1 in 21, or  $\frac{1}{21}$ . In working out questions in 'combinations,' advantage is often taken of the fact that whatever number of elements be *taken* from a group to form a combination, the number *left* gives the same number of combinations; thus the number of combinations of 10 elements, *three* together, is the same as that of 10 elements, *seven* together, etc.

PERN: see HONEY BUZZARD.

PERNAMBUCO, *pĕr-nâm-bô'kô*: maritime province of Brazil, bounded s.e. by Bahia and Alagoas, n.w. by Piauí, Ceará, and Parahiba; 50,000 sq. m. The coast is flat, and fringed with coral-reefs, which render navigation dangerous. The chief river is the San Francisco, which forms the s. boundary, and includes in its basin the greater portion of the province. The banks of this river comprise many rich, expansive meadows, and here the cattle are reared which, in the form of beef and hides, form an important article of export at the seaport of P. Much of the cotton and sugar brought to the market of the cap. is harvested about 300 m. inland, in regions fertilized by streams that rise at the base of the Santa Barbaretta Hills, the first hill-range in this district that arrests the trade-wind from the Atlantic, laden with rain. The San Francisco railway,  $77\frac{1}{2}$  m. long, has done much to encourage the cultivation of sugar and cotton. The province produces sugar-cane, cotton, maize, mandioca or tapioca, cocoa-nuts, and other fruits, vegetables, and medicinal herbs. From the forests, balsams, gums, and dye-woods are obtained.—Pop. (1855) 1,110,831.

PERNAMBUCO—PERNICKETY.

PERNAMBUCO, or RECIFE, *rā-sēfā*: city; most eastern seaport of Brazil; at the mouths of the Biberibe and Capeberibe; lat. 8° 4' s., long. 34° 52' w.; 80 m. s. of Parahiba. It is the greatest sugar-mart in Brazil, and third in commercial importance of the cities of that republic. It consists of three portions, connected by roads and bridges—*Recife* proper, the chief seat of commerce, on a peninsula; *S. Antonio*, the middle district, on an island between the peninsula and the mainland; and *Boa Vista*, on the mainland. The inner harbor, which has depth of 10 to 30 ft., is formed by a reef serving as a breakwater, traceable for several hundred m. at a varying distance along the Brazilian coast, and rising off P. into a straight wall with nearly level top. Opposite the n. extremity of the city is an opening in the reef, resembling an artificial cut, and forming a passage of sufficient width to admit of the entrance of vessels drawing 16 ft. of water. No port is more easily accessible than the outer harbor of P. There is a light-house in the harbor, and it is defended by several forts. Formerly, the city was extremely dirty, the streets unpaved, and much inconvenience was suffered from lack of water. Of late years, however, many improvements have been made; water-works have been erected, extensive and spacious quays formed along the rivers, and the streets have mostly been paved and lighted. Numerous *collegios* and other educational institutions have been established, and the growing wealth and commercial prosperity of the city have been accompanied by increasing comfort and refinement. The principal exports are sugar, cotton, rum, hides, and dye-woods, imports are woollens and cottons, hardware, silks, wines, etc. Annual values of exports and imports average about \$10,000,000, and are increasing: (1880) imports \$12,046,079; exports \$9,824,577. In 1880, out of 1,047 vessels calling at P., 451 were British.—Pop. (1888) town and near suburbs 130,000; (1892) 190,000.

PERNAMBUCO WOOD: see BRAZIL WOOD.

PERNANCY, n. *pēr'nān-sī* [OF. *prenance*, a taking—from OF. *prener*; F. *prendre*, to take—from L. *prehendo*]: in law, the taking, receiving, or enjoying, as the profits of an estate; a taking or receiving tithes in kind. PERNOR, n. *pēr'nēr*, the person who receives and enjoys the profits: see MAINPERNOR.

PERNICIOUS, a. *pēr-nīsh'ūs* [F. *pernicieux*—from L. *perniciōsus*, ruinous, very destructive—from *per*, through; *necārē*, to kill; *nex* or *necem*, death]: highly injurious; tending to injure or destroy, as health or morals; deadly; destructive. PERNICIOUSLY, ad. -*lī*. PERNICIOUSNESS, n. -*nēs*, the quality of being very injurious or destructive.—SYN. of 'pernicious': ruinous; noxious; injurious; hurtful; fatal; mischievous.

PERNICKETY, a. *pēr-nīk'ī-tī* [F. *par*, by, through; *niquet*, a trifle]: in *Scot.*, precise in trifles; very trim in dress.

## PERNOW—PERPEND.

**PERNOW**, *pěr-nov'* (Ger. *Pernau*, *pěr'now*; Russ. *Per-noff*, *pěr-nof'*): city, seaport of the Baltic Provinces, Russia, govt. of Livonia; on a sandy heath at the mouth of the river of P., on the Gulf of Riga, 102 m. n. of the port of Riga, 350 m. w.s.w. of St. Petersburg by sea. The mouth of the river is so shallow that large vessels must anchor in the roads. Exports are chiefly flax, linseed, corn, and timber; principal imports are salt and herrings. In 1866 there entered the port 124 ships, of which 44 were English and 24 Prussian. Pop. (1890) 13,529.

**PERONATE**, a. *pěr'ō-nāt* [L. *perōnātus*, rough-booted—from *pēro*, a boot made of rawhide]: in *bot.*, thickly covered with woolly matter, becoming powdery externally.

**PERONEAL**, a. *pěr'ō-nē'āl* [Gr. *peronē*, the fibula or small bone of the leg]: belonging to or lying near the fibula, as certain muscles connecting it with the foot.

**PERONOSPORA**, *pěr-ō-nōs'pō-râ* [Gr. *peronē*, brooch pin; *sporos*, seed]: genus of fungi that infest plants; the species live within the tissues or on the surface of the plant, and thence draw their nourishment; they cause some of the most destructive plant-diseases known—e.g., potato-rot, caused by *P. infestans*; grape mildew, caused by *P. viticola*. About 70 species of P. are known.

**PERORATION**, n. *pěr'ō-râ'shŭn* [OF. *peroration*—from L. *perōrātīōnem*, the finishing part—from *per*, through; *oratiō*, a speech: F. *péroration*]: the concluding part of an oration or of a speech.

**PÉROUSE'**, LA: see LAPÉROUSE, JEAN-FRANÇOIS GALAUP.

**PEROXIDE**, n. *pěr-ōks'īd* [L. *per*, through, and Eng. *oxide*]: that oxide of a base which contains the largest proportion of oxygen. **PEROX'IDIZE**, v. *-ī-dīz*, to oxidize to the utmost degree.

**PERPEND**, v. *pěr-pënd'* [L. *per*, through, thoroughly; *pendo*, I weigh]: in *OE.*, to weigh in the mind; to consider attentively. **PERPEND'ING**, imp. **PERPEND'ED**, pp.

## PERPENDER—PERPENDICULAR FORTIFICATION.

PERPENDER, n. *pér-pěn'dér*, or PER'PENT-STONE, n. *-pěnt* [F. *parpaing*]: a large stone in a building reaching through a wall, and appearing on both sides of it, a through-band; a coping-stone.

PERPENDICULAR, a. *pér'pěn-dík'ũ-lér* [F. *perpendiculaire*; L. *per'pendic'ulāris*; *perpendic'ulum*, a plumb-line; *perpen'do*, I poise thoughtfully—from *per*, through; *pendo*, I poise or weigh]: hanging or extending in a right line from any point; at right angles to any plane or line; vertical. A straight line standing on another straight line is said to be P. to that other when the angles that it makes on both sides are equal (see ANGLE). A line is said to be P. to a plane when it is at right angles to any line in that plane meeting it. Planes are said to be P. to each other when any line in the one plane P. to their common line of intersection is P. also to all lines meeting it in the other plane. P. in common usage refers to a direction at right angles to the surface of still water, and is synonymous with vertical. PERPENDICULAR, n. a line standing at right angles on another line. PER'PENDIC'ULARLY, ad. *-lĩ*. PER'PENDIC'ULARITY, n. *-lār'ĩ-tĩ*, the state of being perpendicular.

PERPENDICULAR FORTIFICATION: style of defensive milit. construction due to the Marquis de Montalembert, distinguished French gen., who published his work on the subject 1776. Vauban had, it was admitted, rendered the art of attack superior to that of defense. Montalembert strove to reverse this relation, and, in his endeavors, rejected entirely the bastion system of the older engineers. Instead of the occasional bastions, with intervening curtains (see FORTIFICATION), with which they surrounded their *enceinte*, he broke the whole polygon into salient and re-entering angles, the latter being generally right angles. Before the connected redans thus formed were counterguards of low elevation and ravelins, to which the approaches were through casemated *caponnières*. In the salient angle of each redan, he built a brick tower, 40 ft. in diameter, twelve-sided, and four stories high: the second and third tiers were built for heavy guns, and the upper loopholed for musketry. In the centre of the tower was a circular *réduit*, intended as a last refuge for the garrison. Montalembert maintained that from these towers every possible approach could be commanded, which to a great extent is true; but it must be remembered also that the greater space a gun commands, by so much the more is it raised above the plain, and rendered visible. These towers would have little chance against the rifled ordnance of the present day. His system was violently attacked by the French engineers, but Carnot subsequently adopted it, with some modifications, and it enters largely into the modern German defensive works. The system has never found favor with British engineers.

## PERPENDICULAR STYLE.

PERPENDICULAR STYLE, in Architecture: latest stage of Pointed Gothic in England. The P., often called the Tudor style, prevailed in England in the 15th c. and first half of the 16th, succeeding the Decorated style; and was thus in part contemporary with the Flamboyant style in France. These styles have much in common,



Nave of Winchester Cathedral.

but they derive their names from the features peculiar to each. Thus, the Flamboyant (q.v.) is distinguished by the flowing lines of its tracery; while the P. S. is remarkable for its stiff and rectilinear lines. The lines of the window-tracery are chiefly vertical, and the mullions are frequently crossed by horizontal bars. The mold-

## PERPENT-STONE—PERPETUAL CURE.

ings are usually thin and hard. The same feeling pervades the other features of the style; the buttresses, piers, towers, etc., all are drawn up and attenuated, and present in their shallow reesses and meagre lines a great contrast to the deep shadows and bold moldings of the earlier styles. The art of masonry was well understood during the Perpendicular period, and the vaulting was admirably built. Fan-tracery Vaulting (q.v.) belongs to this style. The depressed or four-centre arch is another of its peculiar features. This arch, over doorways, has the moldings generally arranged in a square form over the arch, with spandrels containing shields, quatrefoils, etc. Panelling was also much used, the walls being frequently almost entirely covered with it, as in Henry VII.'s Chapel at Westminster. There are many well-known buildings of this style. Most of the colleges at Oxford and Cambridge belong to it, and in almost every cathedral and church of importance there are some specimens of it. Open timber-roofs are very common in the P. S., and are among the peculiar and beautiful features of English architecture. The roof of Westminster Hall, built by Richard II., is the largest instance of the P. S. ever erected.

PERPENT-STONE: see PERPENDER.

PERPETRATE, v. *pér'pè-trāt* [L. *perpetrātus*, performed thoroughly, executed—from *per*, thoroughly; *patro*, I perform: It. *perpetrare*: F. *perpétrer*]: to commit or perform, applied generally to an evil act—e.g., 'to perpetrate a crime;' sometimes humorously—e.g., 'to perpetrate a pun.' PER'PETRATING, imp. PER'PETRATED, pp. PER'PETRATOR, n. *-tér*, one who performs or commits an act, usually evil. PER'PETRATION, n. *-trā-shūn*, act of performing or committing, as above.

PERPETUAL CURE: form of English ecclesiastical benefice which grew out of the abuse of lay Impropriation (q.v.), the impropriator appointing a clergyman to discharge the spiritual functions of which he himself was not capable. The substituted clergyman, in ordinary cases, is appointed by the bishop, and called a vicar; but when no provision is made for a vicar, the impropriator appoints the clergyman, who is called a perpetual curate. The perpetual curate enters on his office without induction or institution, and requires only the bishop's license. Perpetual cures are also created by the erection and endowment of a chapel subject to the principal church of a parish. Such cures, however, are not benefices, unless endowed out of the fund called Queen Anne's Bounty. The district churches erected under several recent acts are made perpetual cures, and their incumbents are corporations



PLATE 4.

Perpendicular  
Petard



Perpendicular  
Window.



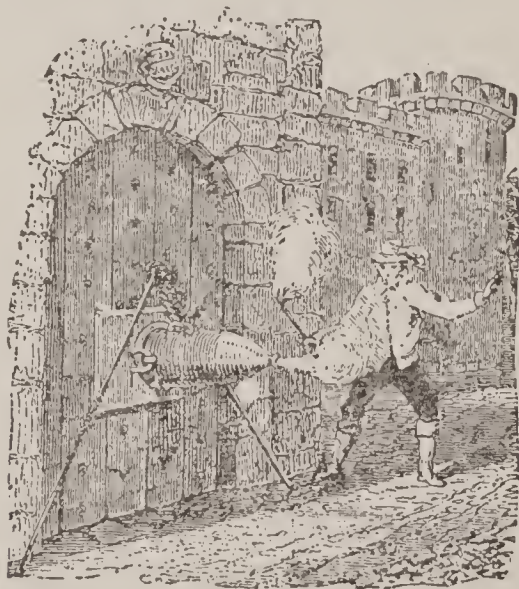
Perpendicular Style, Abbey Church, Bath.



Perron.



Personate Corolla.



Firing a Petard.



Perron.



Petals.



Pertused Leaf.

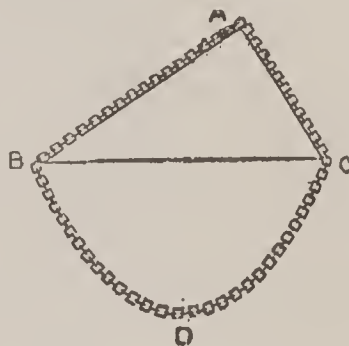
## PERPETUAL MOTION.

PERPETUAL MOTION, THE: term denoting a machine whose motion would continue forever, or till the parts of the machine were worn out. According to Newton's First Law (see MOTION, LAWS OF), all unresisted motion continues forever unchanged. Thus, *if friction could be avoided*, a top or a gyroscope spinning in vacuo is an instance of motion which would be unchanged forever, and which, therefore, might be called perpetual. The motion of the sun in space, the earth's rotation about its axis, and numerous other common motions, are in this popular sense perpetual. It is necessary to remark here, that even these motions are subject to retardation; for instance, those of the bodies of the solar system, by the resistance of the luminiferous medium, which is now supposed to fill all space. This was remarked by Newton himself, for he says, 'the larger bodies, planets and comets, preserve their motions longer (than terrestrial objects), because they move in less resisting media.' The same cause influences the motion of the gyroscope, but in its case there is another retarding influence at work, due to the production of electric currents by the magnetism of the earth. But this is not what is technically understood by the title *The Perpetual Motion*, which denotes a mechanical construction that, without any supply of power from without, can not only maintain its own motion forever, or as long as its materials last, but can also be applied to drive machinery, and therefore to do external work. In other words, it means a device for creating power or energy without corresponding expenditure. This is now known to be absolutely impossible, whatever physical forces may be employed. In fact, the modern physical axiom, the Conservation of Energy (see FORCE) founded on experimental bases as certain as those which convince us of the truth of the Laws of Motion, may be expressed, in the negative, thus: *The perpetual motion is impossible.* Helmholtz's beautiful investigations regarding Conservation of Energy (referred to in FORCE) are founded on this axiom. So is the recent application, by Clausius, of Carnot's remarkable investigation of the 'Motive-power of Fire' to the true Theory of Heat. See other instances at the end of the article.

The complete statement of the impossibility of procuring the P. M. with the ordinary mechanical arrangements, in which it was most commonly sought, is in the *Principia*, as a deduction from Newton's Third Law of Motion. The equivalent principle of Conservation of Energy is there stated in a manner which leaves nothing to be desired; though not given in anything like the modern phraseology. Yet it is usually said, in works on the P. M., that De La Hire (1678) gave the first proof of its impossibility in ordinary mechanics. This proof, published long after Newton's, is by no means so complete, as it exposes only some of the more patent absurdities which had been propounded for the solution of the problem. It is certain, and worthy of particular no-

## PERPETUAL MOTION.

tice, that Newton was far in advance of the greatest of his contemporaries and their immediate successors, in even the fundamental notions of mechanics. Thus, we find John Bernoulli seriously propounding a form of the P. M., depending on the alternate mixture, and separation by a filter, of two liquids of different densities; an arrangement as preposterous as the very common suggestion of a water-wheel which should pump up its own supply of water; and whose absurdity must be evident to any one acquainted with Newton's chapter on the Laws of Motion. It is curious that, long before Newton's time, the physical axiom, that the P. M. is impossible, was assumed by Stevinus as a foundation for the science of Statics. This is particularly interesting when we compare it with the magnificent discoveries which have been evolved in our own day from the same principle applied to the physical forces generally, and not to gravitation alone, as contemplated by Stevinus. His process is as follows: Let an endless chain of uniform weight be passed round a smooth triangular prism ABC, of which the face BC is horizontal. The free portion of the chain, BDC, will hang in a symmetrical curve (CATENARY, q.v.), and its tension will therefore be the same at B and at C. Hence the other portion, BAC, of the chain will be free to move, unless the resolved part of the weight of AB, acting down the inclined plane AB, just balance that of the corresponding portion of the chain down AC. If these balance, the parallelogram of forces is proved; if not, one side will preponderate, and we shall evidently obtain the P. M. We briefly sketch the history of the simpler part of the problem, where mechanical and hydrostatical arrangements alone are contemplated, and where the impossibility of procuring the P. M. had been shown by Newton.

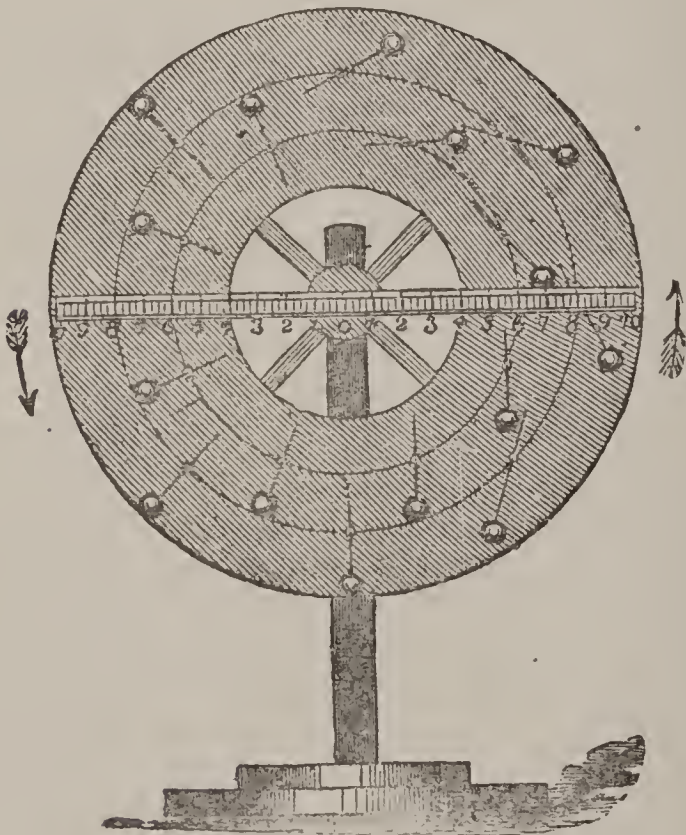


The leading features of the various devices suggested as self-moving engines are three: 1. The machine, being a combination of mechanical powers driven by weights, was to be constructed so as constantly to wind up those weights as they fell, and therefore to be constantly in the same circumstances as to power in each successive complete revolution. The ideal of this, in its simplest form, is that of a wheel moving about a horizontal axis, and so adjusting certain heavy sliding pieces, on its surface, as to have always a preponderance on one particular side. 2. The type of the second class differs from that of the first only in the substitution of liquids for the weights in the first class, and the consequent introduction (often in most extravagant forms) of hydrostatical laws, which the inventors seem to have considered less certain and more pliable than the stern facts of common mechanics. 3. The machine depends on some natural power, such as rain, change of temperature, wind,

## PERPETUAL MOTION.

fluctuations of the barometer, tides, etc. The consideration of this third class is very interesting, but we will defer it for a little.

Of the first class, the only machines that seem ever to have succeeded in permanently deceiving any but their inventors are those of the Marquis of Worcester and of Councilor Orffyreus. Contemporary with the former was Bp. Wilkins, who candidly and ingeniously points out the fallacies of various devices of his own, depending severally on weights, on magnets, and on Archimedes's screw. His first attempt seems to have been closely allied to that of the Marquis of Worcester, of whose engine we have no drawing, and only a very vague description. The following figures give us, however, some no-



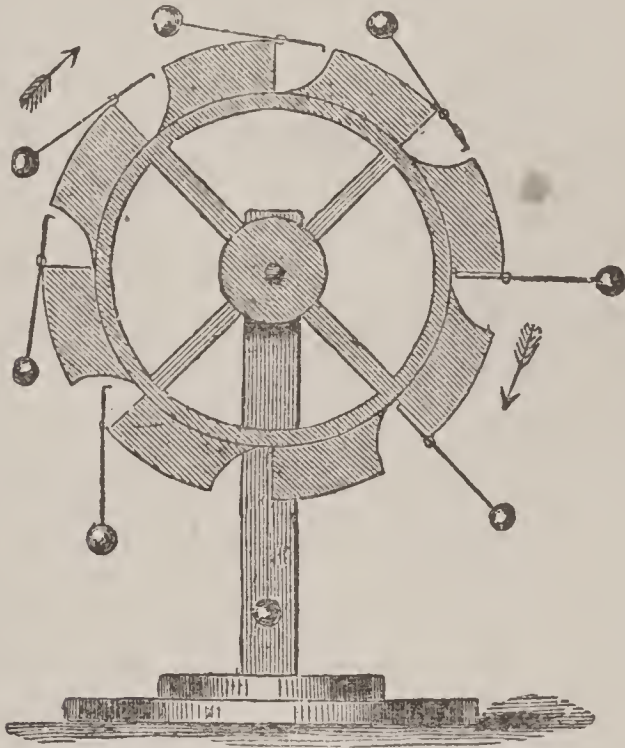
Bishop Wilkins's First Form.

tion of its probable nature. The first is one of Wilkins's, the second that of Jackson, the third that of Merlin. Their construction is evident from the figures.

In all three, the attempt is by the sliding of the balls in their cells, or by the turning of the levers, to give the preponderance to the descending side of the wheel. But even the cuts show that, though the weights on the descending side are on the whole further from the axis of the wheel than those on the ascending side, yet *there are more balls* on the latter than on the former side; and a careful examination, like that made by Wilkins, shows that their moments in opposite directions about the axis balance each other. With reference to the invention of the Marquis of Worcester—otherwise well known as one of the first to foresee, and even in part to

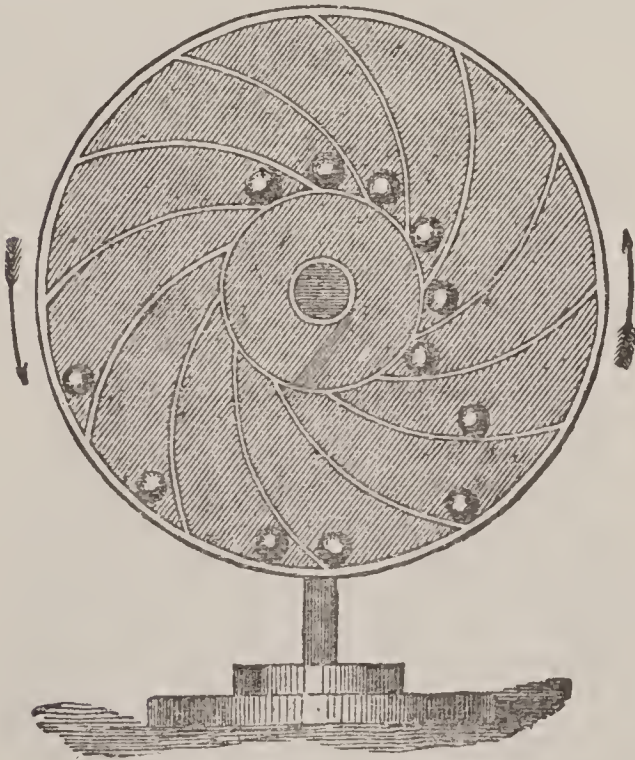
## PERPETUAL MOTION.

realize experimentally, the advantage of steam as a motive-power—we find the following in his *Century of Inventions*: ‘An Advantageous Change of Centers.—To



Jackson's Perpetual Motion.

provide and make that all y<sup>e</sup> weights of y<sup>e</sup> descending syde of a wheele shal be perpetually further from y<sup>e</sup>



Merlin's Perpetual Motion.

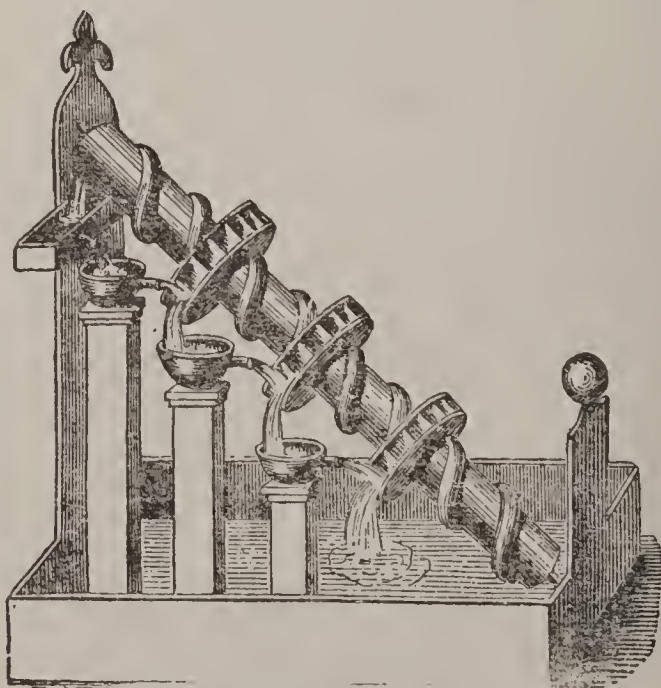
center, then those of y<sup>e</sup> mounting syde, and yett equal in number and heft of y<sup>e</sup> one syde as y<sup>e</sup> other. A most incredible thing if not seene, butt tryed before y<sup>e</sup> late

## PERPETUAL MOTION.

King of happy and glorious memorye in y<sup>e</sup> Tower by my directions, two Extraordinary Embassadors accompanying his Ma<sup>tie</sup> and y<sup>e</sup> D. of Richmond, D. Hamilton, and most part of y<sup>e</sup> Court attending him. The wheele was 14 foote ouer, and 40 weights of 50 p<sup>d</sup> apiece; S<sup>r</sup> Wm. Belford, then Lieut<sup>t</sup> of y<sup>e</sup> Tower, and yet living can justify it with seuerall others; They all saw that noe sooner these great weights passed y<sup>e</sup> Diameter Line of y<sup>e</sup> vpper syde but they hung a foote further from y<sup>e</sup> center, nor no sooner passed the Diameter Line of the lower syde, butt they hung a foote nearer; bee pleased to judge y<sup>e</sup> consequence' (see Harleian MS., No. 2428, Brit. Museum).

The machine of Orffyreus, by which 'S Gravesande was completely deceived, so much so that he wrote to Newton expressing his belief that the P. M. was really found, consisted of a large wheel or drum covered with canvas, to prevent the interior from being seen, and rotating about a thick horizontal axle. This machine, when set agoing in either direction, moved with accelerated speed till it reached a rate of 25 turns in a minute; and on one occasion was sealed up by the elector of Cassel for two months, and at the expiration of that time found to be moving as rapidly as ever. This, like the celebrated automaton chess-player, was evidently a case of clever imposition; and but for its strange effect on 'S Gravesande, would probably have been forgotten long ago. Another ingenious trick was that of Spence of Linlithgow (1818).

Bp. Wilkins's third form is a good example of the second class of contrivances above mentioned. Its construction may be understood from the annexed cut. The



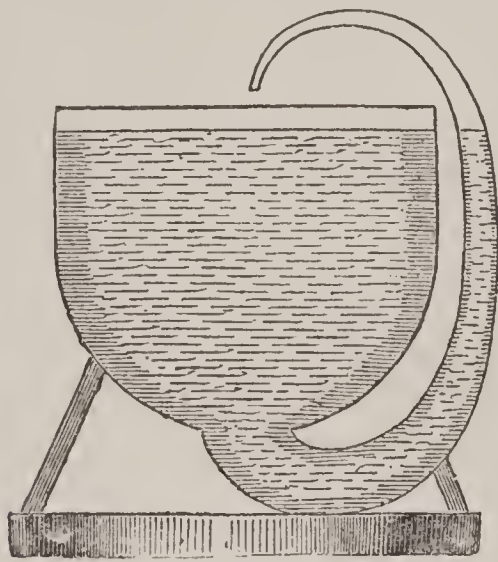
Bishop Wilkins's 'Third Form.

water-wheels, driven by the descending water, are intended to turn the Archimedean screw, so as constantly to replenish the tank above. Wilkins's calm investiga-

## PERPETUAL MOTION.

tion of the reasons why his device will not succeed is very interesting and creditable.

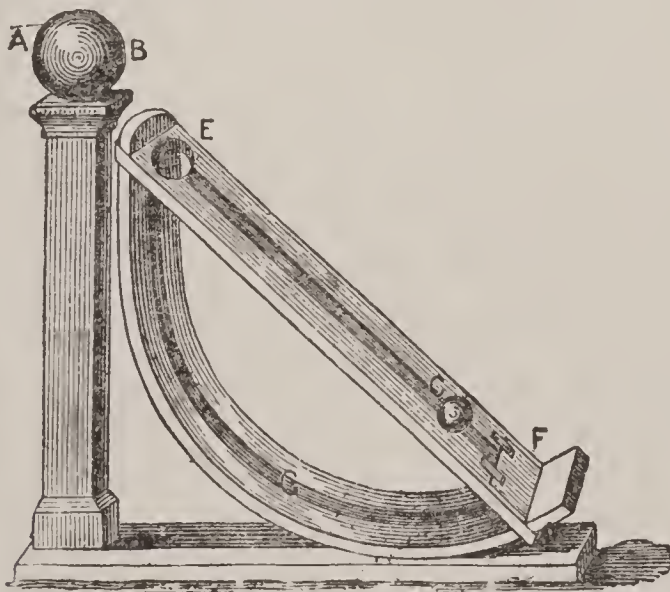
As a contrast, let us take a case of special absurdity, that of Norwood. In the figure, it is supposed that, as the weight of the water or mercury in the large vessel



Norwood's Perpetual Motion.

immensely exceeds that in the neck, it will preponderate, and drive the liquid through the spout into the vessel again; thereby furnishing, not only an admirable perpetual motion, but a conclusive disproof of one of the fundamental laws of Hydrostatics.

The second of Wilkins's cases is an instructive one. It depends on magnetism, and may be understood from the cut. AB is a loadstone, which draws the iron ball C up the inclined plane to E, where there is a hole

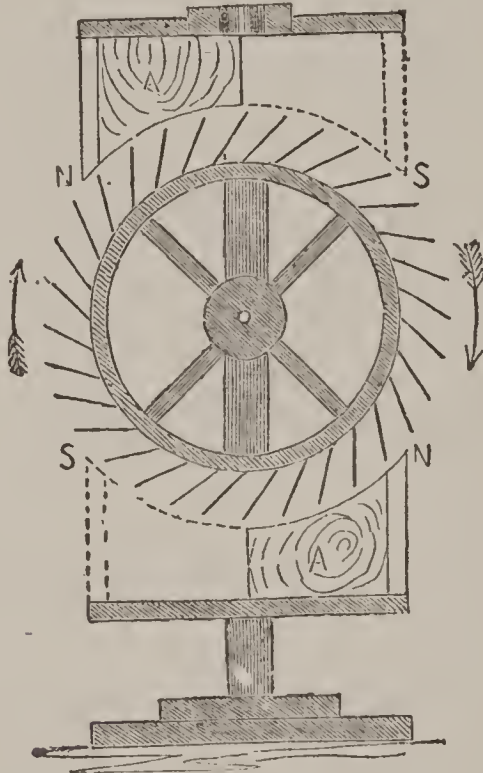


Bishop Wilkins's Second Form.

through which the ball falls down the curved incline, pushes open a trap at F, and is dragged again up the plane by the loadstone. The error of this is the neglect of the action of the loadstone on the falling ball. There would be an admirable case of the P. M. if we could remove or annihilate (without expenditure of work) the

## PERPETUAL MOTION.

action of the loadstone during the descent. But the law of magnetic attraction is the same as that of gravitation, and what is impossible with one must be equally so with the other. A good illustration of this is Addeley's P. M., represented in the annexed sketch. The spokes projecting from the wheel are magnets, whose s. poles are all turned from the centre. These are attracted by the n. poles (N), and repelled by the s. poles (S), of four



Addeley's Perpetual Motion.

fixed magnets; and blocks of *wood* (A) are interposed, to *prevent* magnetic action where it would tend to stop the machine! If it were possible to find a substance which would deal with gravitation or magnetism as an opaque body does with light (casting a shadow), the P. M. would be obtained with the greatest ease.

We merely glance at magneto-electric machines turned by electro-magnetic engines, to which they supply the electric currents; electric machines, driven by a gas-engine, the fuel for which is supplied by the decomposition of water by the electricity produced, etc.; the absurdity of all of which may be imagined from the perfectly analogous case of a steam-engine to which heat might be supposed to be supplied by the friction of bodies driven by the engine itself. An excellent example of this absurdity is furnished by the writings of one of the ablest of geologists. He considers that the internal heat of the earth may be due to chemical combination, that the heat so produced may develop thermo-electric currents, and that these in their turn may decompose the compounds formed, so that the process may go on indefinitely.

But the third class of attempts above described merits a few words. It certainly does *not* give the P. M., but



## PERPETUAL MOTION.

it is capable of furnishing prime-movers which will work uninterruptedly for perhaps hundreds of thousands of years. This is done, however, as we should expect, at the expense of other stores of energy in the universe. Thus, the tide-wheel, or tidal engine, a little-used but most effective source of power, derives its energy entirely from the earth's diurnal rotation. Engines driven by collected rain-water, such as mill-wheels, etc., and others driven by power stored up from winds, etc., depend on energy radiated from the sun, mainly in the form of heat. None of these can, therefore, in strictness be called the P. M., since the energy of the earth's rotation, or of the sun's heat, is drawn upon in their production.

But the complete proof of the impossibility of procuring the P. M. by any arrangement whatever, involving any known forces, was arrived at mainly by the experiments of Joule (q.v.), who showed that the principle of the Conservation of Energy extends, not alone to the forces for which it was enunciated by Newton, but to every known form of physical action. The date 1840-45 may thus be said to have finally settled this long-disputed question; at all events, until new forms of physical forces shall be discovered; and we are now in a position to do generally what was wisely done by the French Acad. 1775 for ordinary mechanical contrivances alone—viz., refuse to consider any scheme whatever which pretends to give work without corresponding and equivalent expenditure. The language in which this decision of the French Acad. is recorded (*Histoire de l'Académie*, 1775) is worthy of being quoted, for its calm scientific clearness and brevity, and for its present applicability to physical science in general: 'The construction of a P. M. is impossible. Even if the effect of the motive-power were not in the long run destroyed by friction and the resistance of the medium [in which the motion takes place], this power could produce merely an effect equivalent to itself. In order, therefore, to produce a perpetual effect from a finite cause, that effect must be infinitely small in any finite time. Neglecting friction and resistance, a body to which motion has been given will retain it forever; but only on condition of its not acting on other bodies; and the only P. M. possible, on this hypothesis (which, besides, cannot occur in nature), would be useless for the object which the devisers of perpetual motions have in view. This species of research has the inconvenience of being costly; it has ruined many a family; and numerous mechanics, who might have done great service, have wasted on it their means, their time, and their talents. These are the principal motives which have led the Academy to its decision. In resolving that it will no longer notice such speculations, it simply declares its opinion of the uselessness of the labors of those who are devoted to them.'

It has been asserted that the infatuation of the perpetual motionists, who (as may be seen by a glance at the specifications of patents in Britain, France, Bel-

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gium, the United States, etc.) are perhaps more numerous now than ever, is due to two causes—one, the idea that the P. M. is a lost but recoverable invention; the other, that some immense govt. reward has been for years laid aside for the successful discoverer. These notions are as fallacious as the grand delusion itself.

A few of the cases above hinted at, in which the impossibility of the P. M. formed the basis of an investigation, will show the great use which may be made of even a negative proposition. Helmholtz has shown from it that the ultimate particles of matter must exert on each other forces, whose direction is that of the line joining each pair of particles, and whose magnitude depends solely on their distance. J. Thomson employed it to show that the freezing-point of water is lowered by pressure, as otherwise work might be created by the freezing of ice-cold water. W. Thomson has employed it to show that a diamagnetic (see DIAMAGNETISM) body does *not* take the opposite magnetism to iron, when in similar circumstances; for if it did, and if, like iron, it took time for the full development of the action, a P. M. might be produced.

The literature of this subject is extensive, but scattered mainly through Patent Records and ephemeral pamphlets. The *Journal des Savants* and Montucla's *Histoire des Mathématiques* may be consulted; but the curious are referred especially to an interesting work by Dircks (of Patent-Ghost notoriety) entitled *Perpetuum Mobile* (Spon, London 1861): to which this article is indebted for some historical notices. The tenor of the work is such that it is not easily discovered whether the author is a perpetual-motionist or not; however this may be, it is extremely complete and interesting as a history.

PERPETUATE, v. *pér-pět'û-ât* [L. *perpetuatus*, proceeded with continually—from *perpetuus*, perpetual: It. *perpetuare*: F. *perpétuer*]: to cause to be continued indefinitely; to preserve from extinction or oblivion. PERPETUATING, imp. PERPETUATED, pp. PERPETUATION, n. *-â'shün* [F.—L.]. the act of making perpetual; incessant continuance. PERPETUAL, a. *-äl* [F. *perpétuel*]: never-ceasing; continuing without intermission; permanent; not temporary; endless. PERPETUALLY, ad. *-lĭ*. PERPETUAL CURACY, in the Anglican church, a living where all the tithes are appropriated and no vicarage endowed (see PERPETUAL CURE). PERPETUAL SCREW, a screw that continues acting without intermission against the teeth of a wheel so long as the moving power continues; an endless screw. PERPETUITY, n. *pér'pě-tū-ĩ-tĭ* [F. *perpétuité*—from L. *perpetuitatem*]: endless duration; continued and uninterrupted existence for an indefinite period of time; something of which there is no end.—SYN. of 'perpetual': continual; continuous; unceasing; incessant; constant; lasting; everlasting; eternal; perennial; never-failing.

## PERPETUITIES--PERPIGNAN.

PERPETUITIES, LAW AGAINST: rule adopted in England to the effect that property cannot be tied up for a period longer than the lives of some parties already in existence, and 21 years more. Those who have the power of disposing of their property have often attempted to regulate the succession of their estate at distant periods. Such was the object of the original practice of entailing property, and so enforcing the devolution of property on a certain series of heirs to the remotest generations. This power of testators was always looked on with jealousy, as tending to embarrass future dealings with the property, and frustrate the purposes for which property is established. So early as the reign of Edward IV., a decision was reached by the courts in *Taltarum's* case, which had the effect of allowing the first tenant in tail in remainder, on arriving at majority, to disentail the estate at discretion. Hence, in England, there has been ever since no mode of settling property in any way so as to tie it up beyond the life of the first who takes an estate of freehold, and the nonage of the tenant in tail next in remainder—i.e., the lives of persons in existence, and 21 years more. This principle applies not only to land, but to personal property. As to the accumulation of the income of property, an attempt was made by Mr. Thellusson to create an immense fortune by directing the income of his property to be accumulated during the lives of all his children, grandchildren, and great-grandchildren, who were living at the time of his death, for the benefit of some future descendants, to be living at the death of the survivor. The probable amount of the accumulated fund was expected to be 19 millions sterling (more than \$90,000,000). The will was in great measure defeated by the existing law; but in consequence of so conspicuous an attempt, an act of parliament was passed, called the Thellusson Act (39 and 40 Geo. III. c. 98), which in future forbids the accumulation of income for any longer time than the life of the granter or settler, or 21 years from his death. See *ENTAIL*.—In the United States, the statutes of the various states providing for limitation of perpetuities are in general similar to those in England. It is recognized as against public policy to allow any person to tie up property beyond a reasonable time.

PERPIGNAN, *pěr-pĕn-yŏng'*: town of France, and fortress of the first rank, cap. of the dept. of Pyrénées-Orientales; on the right bank of the river Tet, 5 m. from the Mediterranean, 40 m. by railway s. of Narbonne. It commands the passage by the e. Pyrenees from Spain into France, and is defended on the s. by a citadel and by ramparts flanked with bastions, and protected by raised works. The works underwent thorough repair 1823, and P. now ranks as one of the first strongholds in France. Its appearance is exceedingly picturesque. From a distance, its houses are seen in the midst of a forest of orchards; and a closer examination shows a collection of narrow streets, covered with awnings,

## PERPLEX—PERRAULT.

houses of semi-Moresque construction, with wooden balconies and courts, and other evidences of Spanish influence. The cathedral, a massive building, begun 1324, the belfry of St. Jacques, and the Castiller (now used as a military prison), with its battlements and machicolations, give character to the town. P. contains barracks for 5,000 men, a council-house, palace of justice, mint, a college, numerous schools, museums, and scientific societies. Good *vin ordinaire* (red) is grown in the vicinity; woolen cloths, playing-cards, leather, etc., are manufactured, and there is trade in wine, brandy, wool, cork-bark, and silk.

P., as cap. of the former county of Roussillon, remained long in the hands of the kings of Aragon, and 1349 King Pedro founded a university here. In 1642 it was taken by Louis XIII.; and since that time, the town itself, together with the county of Roussillon, has remained in the possession of the French.—Pop. (1872) 20,011; (1881) 24,959; (1891) 33,878; (1901) 36,157.

PERPLEX, v. *pér-plěks'* [F. *perplexe*—from L. *perplexus*, very much entangled or twisted together—from *per*, thoroughly; *plexus*, twisted, interwoven; *plecto*, I plait]: to make intricate or difficult; to puzzle; to distract; to confuse; to distress with suspense or anxiety. PERPLEX'ING, imp.: ADJ. troublesome; embarrassing. PERPLEXED', pp. *-plěkst'*: ADJ. entangled; embarrassed; puzzled. PERPLEX'EDLY, ad. *-ěd-lě*. PERPLEX'EDNESS, n. *-něs*, state of being perplexed; embarrassment. PERPLEX'ITY, n. *-ě-tě* [F. *perplexité*—from L.]: anxiety; intricacy; distraction of mind through doubt or difficulty.—SYN. of 'perplex': to embarrass; pose; entangle; involve; complicate; bewilder; harass; molest; vex; tease; plague.

PERQUISITE, n. *pér'kwě-zit* [L. *perquisitus*, made diligent search for; mid. L. *perquisitum*, anything purchased—from *per*, thoroughly; *quarērē*, to seek]: the incidental gains of an office or an employment over and above the settled wages. PER'QUISITION, n. *-zish'ün* [F.—L.]: a thorough inquiry or search.

PERRAULT, *pā-rō'*, CHARLES: French writer: 1628, Jan. 12—1703, May 16; b. Paris; son of an advocate. In 1651 he became a member of the Paris bar; but through the minister Colbert, he was made controller-gen. of the royal buildings, and 1671 member of the French Acad. His famous controversy with Boileau regarding the comparative merits of the ancients and moderns, originated in his poem *Le Siècle de Louis le Grand*, read before his confrères of the Acad., seeking to prove modern authors superior to Homer, Herodotus, Plato, Aristotle, Virgil, etc. His elaborate and learned *Parallèle des Anciens et des Modernes* (4 vols. 1688–98) completely fails in its logic. Boileau was his keenest opponent, and fiercely assailed him in *Réflexions sur Longin*, to which P. replied with equal acrimony, but not equal wit, in *Apologie des Femmes* (1694). However this quarrel had one good

## PERRON--PERRY.

result, P.'s admirable work, *Hommes Illustres du Siècle de Louis XIV.*, containing 200 critical biographies. But the work that has given him high repute is *Contes des Fées*, or Fairy Tales: see NOVELS. The grace, liveliness, and ingenious child-like fancy of these charming compositions, written in P.'s advanced age, give them rank above all other fairy tales.

PERRON, n. *pěr'rōn* [F. *perron*--from *pierre*, a stone: L. and Gr. *petra*, a rock, a stone]: a staircase or flight of steps outside a building.

PERRON', ANQUETIL DU: see ANQUETIL-DUPERRON.

PERRONE, *pěr-rō'nā*, GIOVANNI: 1794--1876, Aug. 29; b. Chieri, Piedmont. He graduated as doctor of theology at Turin Univ. and entered the Soc. of Jesuits, Rome, 1815. He became prof. of theol. in the Roman Coll. 1823, which position he held till the suppression of the Jesuit houses 1873, except during his service as rector in the Coll. of Ferrara, 1830--33, and in the Roman Coll. 1853--56. In 1848 he took refuge in England with some of his pupils, and opened a course at Stonyhurst for them and English Jesuits. He returned to Rome 1850. He is the great Rom. Cath. teacher of the 19th c., his lectures on theology since 1835 having supplanted all others in nearly all the Rom. Cath. schools of the world. He published more than 60 different works, the principal being *Praelectiones Theologicae* (9 vols. 1835; 31st ed. 1865), and the same abridged (4 vols., 1845; 36th ed. 2 vols. 1881). He died in Rome.

PERRUQUE, n. *pěr-rōk'* [F. *perruque*--from It. *parruca*, a wig: perhaps connected with L. *pellucus*--from *pellis*, a skin]: a wig. PERRUQUIER, n. *pěr-rō'kī-ěr* [F.]: a wig-maker.

PERRY, n. *pěr'rī* [F. *poire*, a pear; *poiré*, perry--from L. *pirum*, a pear]: the fermented juice of pears, a beverage containing 5 to 9 per cent. of alcohol. It is usually made best from the pears least attractive for eating.

PERRY, *pěr'rī*, ARTHUR LATHAM, D.D., LL.D.: political economist: b. Lyme, N. H., 1830, Feb. 27; graduated at Williams Coll. 1852; prof. of hist. and polit. econ. in that college since 1853. He has been an active advocate of free trade, in addresses, newspaper articles, and in his published vols., *Political Economy* (1865), and *Introduction to Political Economy* (1877). He appeared in debates on protection and free trade with Horace Greeley 1868--9. He has also been an active member of local and state historical societies, and is preparing a history of Williamstown, Mass., and of Williams College.

PER'RY, CHRISTOPHER RAYMOND: 1761, Dec. 4--1818, June 1; b. Newport, R. I. He enlisted in the colonial army, afterward serving on privateers and in the Amer. navy during the revolution. He was twice captured, and was imprisoned in the famous prison-ship *Jersey*, from which he escaped, and returned to the mercantile marine. War with France seeming imminent, he was made post-capt. U.S.N. 1798, Jan. 9. While cruising in

## PERRY.

the W. Indies he co-operated with Toussaint L'Ouverture in the civil war in San Domingo. On the practical disbandment of the navy 1801, he was appointed collector of Newport, where he died several years after his retirement to private life.

PER'RY, MATTHEW CALBRAITH: 1794, Apr. 10—1858, Mar. 4; b. S. Kingston, R. I.; bro. of Oliver Hazard P. He entered the U. S. navy as midshipman 1809, Jan. 16, serving under his brother Oliver, and afterward under Coms. Rodgers and Decatur, in the war of 1812. He was promoted lieut. 1813, Feb. 27; and 1819, as executive officer of the *Cyane*, took the first colony of negroes from the United States to Africa, fixing the locality of Monrovia 1821. Under Com. David Porter in the W. Indies 1822 he captured several pirate vessels. He was made commander 1826, Mar. 21, capt. 1837, Feb. 9. He served many years on foreign stations, especially the Mediterranean, where he protected American commerce from Greek pirates. In 1829 he took John Randolph as envoy to the czar in the first American man-of-war entering Russian waters. In a private audience, Czar Nicholas tendered him high rank in the Russian navy, which he declined. He also exchanged courtesies with Mehemet Ali, founder of the khedival dynasty of Egypt. During ten years of duty as master-commandant at the Brooklyn navy-yard, beginning 1833, Jan. 7, he gave much attention to the study and application of naval science with excellent results to the U. S. navy, organizing the first steam service, and 1838-40 commanding the first steam war-vessel of our navy, the *Fulton II*. He commanded the w. African squadron 1843-45, enforcing the Webster-Ashburton treaty; and in the Mexican war was in charge of the steam navy, assisted at the siege of Vera Cruz, captured Laguna, Tabasco, and Tuspan; and blockaded the coast, holding every important place until the end of the war. He organized and commanded the expedition to Japan 1853-4, and by skilful negotiation opened that country to foreign commerce. In the fishery disputes with Canada, he visited Newfoundland and helped to bring about the reciprocity treaty of 1854. He died in New York.

PER'RY, OLIVER HAZARD: 1785, Aug. 23—1819, Aug. 23; b. S. Kingston, R. I.; son of Christopher Raymond P. He was commissioned midshipman 1799, Apr. 7; served in the war against Tripoli, and was made lieut. 1807, Jan. 15. He became one of the best ordnance officers in the U. S. navy. He was transferred to service under Com. Isaac Chauncey on Lake Ontario, 1813, Feb., and participated in the attack on Ft. George. On being appointed to fit out a squadron on Lake Erie, he proceeded to Presque Isle (now Erie), Penn., where he equipped 9 small vessels, with which he attacked and captured the British fleet near Put-in-Bay, O., 1813, Sep. 15. He reported this victory to Gen. William H. Harrison in the memorable dispatch 'We have met the

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enemy and they are ours.' His success won him the thanks of congress, a medal, and the rank of capt. He co-operated with Gen. Harrison at Detroit and the battle of the Thames, 1813, Oct. 15; assisted in the defense of Baltimore; and commanded the *Java* in the Mediterranean squadron 1815. While in command of U. S. vessels in the W. Indies, he was attacked with yellow fever, and died at Port Spain, Trinidad. By act of congress, his remains were removed in a ship-of-war and buried at Newport, 1826, Dec. 4. A granite obelisk was erected by the state of R. I., and a bronze statue erected by the citizens of Newport was unveiled 1885, Sep. 10.

PER'RY, WILLIAM STEVENS, S.T.D., LL.D.: Prot. Episc. bp. of Iowa; b. Providence, R. I., 1832, Jan. 22; graduated at Harvard 1854. He was minister of churches in Newton, Mass., Boston, Nashua, N. H., Portland, Me., Litchfield, Conn., and Geneva, N. Y.; prof. of hist. in Hobart Coll. at Geneva 1871-3, and for a while pres. Since 1876, he has been the Prot. Episc. bp. of Iowa. Among his numerous books are many pertaining to the early hist. of the Prot. Episc. Chh. in America; also a hist. of the same 1587-1883, 2 vols.; *Some Summer Days Abroad* (1880); *Life Lessons from the Book of Proverbs*, (4th ed. 1885); a vol of sermons (1885); and 12 episcopal addresses (1888).

PER'SEA: see AVOCADO.

PERSECUTE, v. *pér'sě-kūt* [F. *persécuter*, to persecute—from L. *persēcutus*, followed perseveringly—from *per*, thoroughly; *secūtus*, followed, pursued; *sequi*, to follow]: to pursue closely or harassingly; to afflict or harass on account of religion; to pursue with continued malignity; to harass or annoy with solicitation or importunity. PER'SECUTING, imp. a. harassing or afflicting unjustly, particularly for religious opinions; pursuing with enmity in order to injure in person or means. PER'SECUTED, pp. a. harassed and afflicted by the enmity of another. PER'SECUTOR, n. *-kū-tēr*, one who persecutes; one who pursues and harasses another unjustly. PER'SECU'TION, n. *-kū'shūn* [F.—L.]: the act of harassing or punishing another unjustly; the act of afflicting or destroying on account of adherence to a particular creed. PER'SECU'TIVE, a. *-kū'tiv*, following; persecuting.

PERSECUTIONS, THE TEN, of the early Christian Church: denoting in ecclesiastical history certain periods of special severity exercised toward the rising community of Christians, to compel them to renounce their new creed and conform to the established religion of the empire. The Christian community were at all times regarded with suspicion and dislike in the Roman empire—the constitution of Rome being not only essentially intolerant of new religions which, like the Christian, were directly aggressive against the established paganism of the state, but being also particularly hostile to private associations and private assemblages for worship, such as those which every Christian congregation by its very

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nature presented: thus there are in the first three centuries very few periods in which the church had everywhere immunity from persecution. But the name denotes specifically certain periods when either new enactments were passed against Christianity, or the existing ones were enforced with unusual rigor. The notion of *ten* such periods is commonly accepted almost as an historical axiom; but this precise determination of the number is comparatively recent. In the 4th c., no settled theory of the number of persecutions seems to have been adopted. Lactantius reckons but six; Eusebius does not state the number, though his narrative supplies data for nine. Sulpicius Severus, 5th c., is the first who expressly states the number at *ten*; but he enumerates only nine in detail, and in completing the number to ten, he adds the general persecution which, at the coming of Antichrist, is to precede the end of the world. The fixing of ten as the number seems to have originated in a mystic allusion to the ten horns of the beast in the Apocalypse [Rev. xvii. 12).

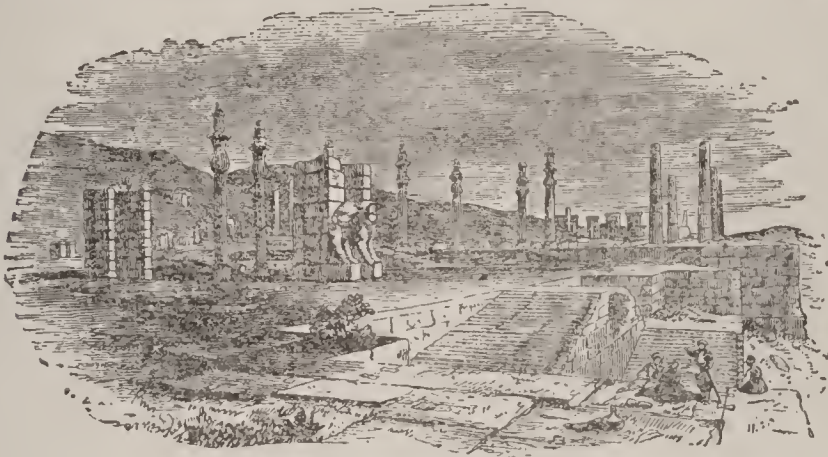
This however is a question only of words, the diversity of enumeration arising from different notions attached by the several historians to the designation *general*. If taken strictly to comprise the entire Roman empire, the number must fall below ten; if used more loosely of local persecutions, the number might be very largely increased. The ten commonly regarded as general are the following: under Nero, 64; under Domitian, 95; under Trajan, 107; under Hadrian, 125; under Marcus Aurelius, 165; under Septimius Severus, 202; under Maximinus, 235; under Decius, 249; under Valerianus, 257; under Diocletian, 303. The extent and the duration of some of these, and the total number of victims in the pagan persecutions of the church, have been the subject of considerable controversy. It is quite certain that there have been exaggerations on the Christian as well as on the adverse side; but it has been shown beyond possibility of doubt, and the most recent explorations have confirmed the arguments, that the data on which were founded the estimates of Dodwell and Gibbon, the most prominent advocates of the theory of the small number, were fallacious; and that, not including the many victims of the constantly recurring local violences, the number who fell in each of the above-named persecutions was both large in itself, and spread, in most cases, over a considerable extent of the Roman empire. The most violent, as well as the most widely-spread persecutions, were under Nero, Trajan, Maximinus, Decius, and Diocletian. The last was in reality far less the work of Diocletian than of his colleague Galerius; but it was extremely cruel, and, with occasional interruptions, continued from 303 to the victory of Constantine over Maxentius—nearly ten years.

PERSEPHONE: see PROSERPINA.



## PERSEPOLIS.

PERSEPOLIS, *pér-sěp'ō-līs* (Persian City), Greek translation of the lost name of the cap. of anc. Persia (*Parsa-Karta?*): on the river Araxes (Bendemir), e. of the river Medus (Polwat, or River of Murghab), in the plain of Merdusht, about 35 m. n.e. of Shiraz, on the road to



Ruins of Persepolis.

(Copied from Fergusson's *Palaces of Nineveh and Persepolis Restored.*)

Ispahan. A number of most remarkable ruins is all that remains of that city, with which, according to anc. writers, 'no other city could be compared either in beauty or in wealth,' and which was generally designated 'The Glory of the East.' Darius Hystaspes, Xerxes, Artaxerxes, and other Achæmenides, each in turn contributed to its aggrandizement. Alexander the Great, in his march of conquest, is said to have destroyed P. completely; but this probably must be understood to apply only to some of the chief palaces. It may also be presumed that after the fall of the Achæmenides, that extension of the original town (afterward known, and important in history till a recent period, as Istakhar), in which were the royal edifices and temples used as the royal treasuries till the time of Epiphanes, gradually fell into decay. The situation of these structures, overlooking the vast luxuriant plain of Merdusht, is described in terms of rapturous enthusiasm by every traveller from Chardin to our own day. Three groups are chiefly distinguishable in the vast ruins. First, the Chehel Minâr (Forty Pillars), with the Mountain of the Tombs (Rachmed), called also Takht-i-Jamshîd, or the structure of Jamshîd, after some fabulous ancient king, popularly supposed to be the founder of Persepolis. The next in order is Naksh-i-Rustam, to the n.w., with its tombs; and the last, the building called the Haram of Jamshîd. The most important is the first group, on a vast terrace of cyclopean masonry at the foot of a lofty mountain-range. The extent of this terrace is about 1,500 ft. n. by s., and about 800 e. by w.; and it was, according to Diodorus Siculus, surrounded by a triple wall of 16, 32, and 60 cubits respectively in height, for the triple purpose of giving strength, inspiring awe, and defense. The whole internal area is further divided into three terraces—the lowest toward the s.; the central 800 ft. square, 45

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ft. above the plain; and the third, the northern, about 550 ft. long, and 35 ft. high. No traces of structures are found on the lowest platform; on the n., only the so-called 'Propylæa' of Xerxes; but the central platform seems to have been occupied by the foremost structures, which again, however, do not all appear to have stood on the same level. There are distinguished here the so-called 'Great Hall of Xerxes' (called *Chehel Minâr*, by way of eminence), the Palace of Xerxes, and the Palace of Darius, towering one above the other in successive elevation. The stone used for the buildings is dark-gray marble, cut into gigantic square blocks, and in many cases exquisitely polished. The ascent from the plain to the great n. platform is formed by two double flights, the steps of which are nearly 22 ft. wide,  $3\frac{1}{2}$  inches high, and 15 inches in the tread, so that several travellers have been able to ascend them on horseback. What are called the Propylæa of Xerxes on this platform are two masses of stone-work, which probably formed an entrance-gateway for foot-passengers, paved with gigantic slabs of polished marble. Portals, still standing, bear figures of animals 15 ft. high, closely resembling the Assyrian bulls of Nineveh. The building itself, conjectured to have been a hall 82 ft. square, is, according to the cuneiform inscriptions, as interpreted by Rawlinson, the work of Xerxes; the inscription reads as follows:

'The great god Auramajda, he it is who has given this world, and who has given life to mankind, who has made Xerxes king, both king and lawgiver of the people. I am Xerxes the king, the great king, the king of kings, the king of the many-peopled countries, the supporter also of the great world, the son of King Darius, the Achæmenian.

'Says Xerxes the king, by the grace of Auramajda, I have made this gate of entrance; there is many another nobler work besides this Persepolis which I have executed, and which my father has executed;' etc.

An expanse of 162 ft. divides this platform from the central one, which still bears many of those columns of the Hall of Xerxes from which the ruins have taken their name. The staircase leading up to the *Chehel Minâr*, or Forty Pillars, is, if possible, more magnificent than the first; and the walls are more superbly decorated with sculptures, representing colossal warriors with spears, gigantic bulls, combats with wild beasts, processions, and the like; while broken capitals, shafts, pillars, and countless fragments of buildings, with cuneiform inscriptions, cover the whole vast space of this platform, 350 ft. from n. to s., and 380 from e. to w. The Great Hall of Xerxes, perhaps the largest and most magnificent structure that the world has ever seen, is computed to have been a rectangle of about 300-350 ft., and to have consequently covered 105,000 sq. ft., or  $2\frac{1}{2}$  acres. The pillars were arranged in four divisions, consisting of a centre group 6 deep every way, and an advanced body of 12 in two ranks, the same number flanking

## PERSEPOLITAN—PERSEUS.

the centre. 15 columns are all that remain of the number. Their form is very beautiful. Their height is 60 ft., circumference of the shaft 16, length from the capital to the torus, 44 ft. The shaft is finely fluted in 52 divisions; at its lower extremity begin a cincture and a torus, the first, two inches in depth, and the latter, 12 inches, whence devolves the pedestal, shaped like the cup and leaves of the pendent lotus, the capitals having been surmounted by the double semi-bull. Behind the Hall of Xerxes was the so-called Hall of Hundred Columns, s. of which are indications of another structure, which Fergusson terms the Central Edifice. Next along the w. front stood the Palace of Darius, and to the s. the Palace of Xerxes, about 86 ft. square, similarly decorated, and of similar grand proportions.—For more minute description, see travels of Niebuhr, Ker Porter, Rich, etc.; Fergusson's *Palaces of Nineveh and Persepolis Restored*, Vaux's *Nineveh and Persepolis*, and Rawlinson's *Five Great Monarchies*. See also PERSIAN ARCHITECTURE: CYRUS: DARIUS: XERXES: CUNEIFORM.

PERSEPOLITAN, a. *pér-sē-pö'l'i-tän*: of or pertaining to the city of Persepolis, capital of ancient Persia: N. native or resident of Persepolis.

PERSEUS, in Grecian Mythology: son of Zeus and Danaë (q. v.), and grandson of Acrisius. He was brought up at Seriphos, one of the Cyclades, where Polydectes reigned, who, wishing to rid himself of P. for private reasons, sent him, when a youth, to bring the head of the Gorgon Medusa, on the pretense that he wanted to present it as a bridal gift to Hippodamia. P. set forth under the protection of Athene and Hermes, the former of whom gave him a mirror, by which he could see the monster without looking at her (for that would have changed him into stone); the latter, a sickle; while the nymphs provided him with winged sandals, and a helmet of Hades, or invisible cap. After numerous wonderful adventures, he reached the abode of Medusa, who dwelt near Tartessus, on the coast of the ocean, and succeeded in cutting off her head, which he put into a bag, and carried off. On his return, he visited Ethiopia, where he liberated and married Andromeda, by whom he subsequently had numerous children, and arrived at Seriphos in time to rescue his mother from the annoyance of the too ardent addresses of Polydectes, whom with some of his companions P. changed into stone. After this, he went to Argos, from which Acrisius fled to Thessaly, and P. assumed the vacant throne. But this, like many other details of the myth, is differently narrated. P. was worshipped as a hero in various parts of Greece, and, according to Herodotus, in Egypt also. In anc. art, the figure of P. much resembles that of Hermes.—In anc. astronomy P. was represented in a northern constellation, holding in one hand the severed head of the Gorgon, and with the other hand waving a sword.

## PERSEUS.

PERSEUS, *pér'sūs* or *pér'sē-ūs*, or PERSES, *pér'sēz*,<sup>1</sup> last King of Macedonia: b. in the latter part of B.C. 3d c., died a few years later than B.C. 168; eldest son of Philip V. He was trained to a military life from his earliest years, and after bringing about the death of his younger brother, Demetrius, who was a favorite both with the Macedonians and with the Romans, he succeeded his father on the throne B.C. 179. Philip had long foreseen that a contest between Rome and Macedon was inevitable, and he had carefully prepared for it, so that P., on his accession, found himself fore-armed. Meanwhile, he governed Macedon with great prudence and moderation, and became popular with his subjects and neighbors. Seleucus IV. (Philopator) gave him his daughter Laodice in marriage; Prusias, the Bithynian king, married his sister; the Greek states looked favorably on his projects, and his envoys were well received even at Carthage. The Romans took the alarm, and—after some delusive negotiations—sent an army into Thessaly B.C. 171. The war lasted four years; in the first three, the advantages were so little on the side of the Romans, that there was a widespread feeling in P.'s favor in the countries bordering on the Levant and the Archipelago. In the beginning of the fourth campaign B.C. 168, L. Æmilius Paulus arrived, and took command of the Roman forces. A great battle was fought at Pydna (June 22), in which the army of P. was utterly routed. The king himself was soon afterward forced to surrender, and conveyed to Rome, where he adorned the triumph of the conqueror. He died in captivity at **Alba.**

PERSEVERANCE—PERSEVERE.

**PERSEVER'ANCE OF THE SAINTS:** doctrine, one of the 'five points of Calvinism,' resulting logically from the essential parts of the Calvinistic system. As stated in the Westminster Confession of Faith it is that true Christian disciples, called and accepted of God, 'and sanctified by His Spirit, can neither totally nor finally fall away from the state of grace, but shall certainly persevere therein to the end and be eternally saved.' It is advocated not only by arguments from other doctrines, e.g., election, atonement, the intercession and mediatorial dominion of Christ, imputed righteousness, and regeneration, but also from many texts of Scripture, e.g., those which declare *eternal life* to be always connected with believing, and those which encourage the believer to depend on the faithfulness, love, and omnipotence of God. To an objection commonly urged against it, that it tends to make men careless concerning virtue and holiness, its advocates reply, that this objection is valid only against a doctrine very different from theirs—the true doctrine of final perseverance being one of perseverance in holiness, and giving no encouragement to a confidence of final salvation not connected with a present and even an increasing holiness. Arminians refuse to make so sweeping a statement as to the *impossibility* of falling from grace.

**PERSEVERE**, v. *pér'sě-věr'* [F. *persévérer*—from L. *persév'erārē*, to continue steadfastly, to persist—from *per*, thoroughly; *sevērus*, strict, severe: It. *perseverare*]: not to give over; to continue persistently in any business or enterprise undertaken; to pursue steadily a design or course begun; to be constant in effort or progress. **PER'SEVE'RING**, imp.: **ADJ.** constant in purpose or design; persistent. **PER'SEVERED'**, pp. *-vēr'd'*. **PER'SEVE'RINGLY**, ad. *-lĭ*. **PER'SEVE'RANCE**, n. *-vēr'āns* [F.—L.]: persistence in any design or attempt; constancy in pursuit or progress; in *theol.*, persistent continuance in the Christian character, and consequent favor of God—called also *final perseverance* (see above).—**SYN.** of 'perseverance': constancy; steadiness; persistence; steadfastness; continuance.

## PERSIA.

PERSIA, *pér'shī-a* [deemed by many scholars a corruption of *Arya*—Hellanicus gives *Aria* as a name of Persia, and Herodotus subsequently knew the Medians as the *Arii*; see Max Müller]: native name IRAN (see ARYAN RACE): the most extensive and powerful native kingdom of w. Asia; bounded n. by the great plain of Khiva, the Caspian Sea, and the Trans-Caucasian provinces of Russia; e. by Bokhara, Afghanistan, and Beloochistan; s. by the Strait of Ormuz and the Persian Gulf; and w. by Asiatic Turkey. It extends 900 m. from e. to w., and 700 m. from n. to s.; about 648,000 sq. m., about three times as large as France. It consists mostly of a great tableland, or elevated plateau, which in the centre and on its e. side is almost a level; but on the n., w., and s. is covered with mountain-chains. The province of Azerbaijan, in the n.w., is almost wholly mountainous. From its s. boundary, the majestic range of the Elburz runs e., following the line of the Caspian coast at a distance varying from 12 to 60 m. At Astrabad, the mountains sink into ridges of lower elevation, one of which joins the Paropamisus in Afghanistan. A hill country lies n. of this line; it terminates in the Damani-koh chain, which sinks abruptly to the low plain of Turkestan. S. and e. of Azerbaijan, a broad mountain-belt traverses P. from n.w. to s.e., the chains and valleys of which it consists lying in the same direction. To this region belong the mountains extending from Hamadan to Shiraz, many of whose peaks are clad with perpetual snow; and the Zagros Mountains and Pushti Kuh on the w. frontier. The Persian mountains are mostly primitive rock; granite, porphyry, felspar, and mountain-limestone enter largely into their composition. They show indications of volcanic action—Taftan, s. of Lake Zirreh, or Zamoan, being an active, and Demavend an extinct volcano; and the destructive earthquakes still frequent in n. and n.w. P., indicate the presence of subterranean fires. The Persian plateau, which lies in an angle between these mountains and spreads e. to the plateau of Afghanistan, ranges from 2,000 to 5,000 ft. above sea-level, the lowest portion being the Great Salt Desert in the s.w. of Khorassan, 2,000 ft. above sea-level; while the average elevation of the whole plateau above the sea is about 3,700 ft.

Almost the whole of Khorassan (q.v.), the n. half of Kerman (q.v.), the e. of Irak-Ajemi (q.v.), which form the great central plain, and detached portions of all the other provinces, except those on the Caspian Sea, forming more than three-fourths of the surface of P., are desert. In parts of this waste, the surface is dry, and produces a scanty herbage of saline plants; in other parts, it is covered with salt marshes, or with a dry, hard, salt crust, sometimes of considerable thickness, which glitters and flashes in the sunlight, forcing the traveller on these inhospitable wastes to wear a shade to protect his eyes; but by far the greater portion of this region consists of sand, sometimes so light and im-

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palpable as to be shifted hither and thither by the slightest breeze. This great central desert contains a few oases, but none of great extent. A narrow strip of low and level country extends along the shores of the Persian Gulf and the Strait of Ormuz. It consists of a succession of sandy plains, occasionally interrupted by a plantation of palms near the scanty rivulets which traverse it. It is called Dushtistan, or Gurmsir—that is, the warm region, in distinction from the mountainous districts, called Sirhud, or the cold country.

Although so much of P. is desert, parts of the country are of exceeding fertility and beauty: the immense valleys, some of them 100 m. in length, between the various ranges of the Kerman Mountains, abound in rare and valuable vegetable productions. Great portions of the provinces of Fars, Khuzistan, Ardelan, and Azerbaijan have been lavishly endowed by nature with the most luxuriant vegetation; while the provinces of Ghilan and Mazanderan, between the Elburz and the Caspian Sea, and the s. slopes of the Elburz, are as beautiful as forest, water, and a hot climate can make them—the mountain-sides being clothed with trees and shrubs, and the plain, 300 m. long by 5 to 30 m. wide, studded with mulberry plantations, rice-fields, vineyards, orchards, orange-grounds, and sugar and cotton plantations.

*Rivers.*—P. has hardly a river properly termed navigable, though some of the rivers are several hundred m. in length, and of great width and volume. Among those noteworthy is the Karun, which rises in the mountains s. of Ispahan, and falls into the Shat-el-Arab, near Mohammerah. The rivers which flow southward receive, in the latter part of their course, few tributaries, and fertilize only a narrow strip of land on each side, except when their waters are applied by canals or other works to artificial irrigation of the soil. This mode of increasing and extending the productive powers of the country was much employed in ancient times; but the constant change of masters, and the never-ending disturbances under which P. has so long suffered, led to neglect of irrigation; and most of these monuments of the architectural skill and laborious industry of the ancient Persians are now ruinous.

*Lakes.*—P., as a natural consequence of the nature and situation of its surface, abounds in saline lakes, and nearly 30 of them have no visible outlets. The chief lake is Lake Oroomiah (q. v.), in Azerbaijan. Lake Bakhtegan, in the e. of Fars, the receptacle for a drainage of the n. half of that province, is about 60 English m. in length by 9 in breadth. Lake Shiraz (q. v.) is much smaller. Part of Lake Zirreh is now included in the frontier of P., but it may still be considered as belonging chiefly to Afghanistan.

*Climate and Products.*—The climate is necessarily very varied. What the younger Cyrus is reported to have said to Xenophon regarding the climate, 'that people

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perish with cold at one extremity, while they are suffocated with heat at the other,' is literally true. P. may be considered to possess three climates—that of the s. Dushtistan, of the elevated plateau, and of the Caspian provinces. In the Dushtistan, the autumnal heats are excessive, those of summer more tolerable, while in winter and spring the climate is delightful. On the plateau, the climate of Fars is temperate. About Ispahan, the winters and summers are equally mild, and the regularity of the seasons appears remarkable to a stranger. N. and n.w. of this, the winters are severe. The desert region of the centre and east, and the country on its border, endure most oppressive heat during summer, and piercing cold in winter. The Caspian provinces, from their general depression below the sea-level, are exposed to a heat in summer almost equal to that of the W. Indies, and their winters are mild. Rains, however, are frequent and heavy, and many tracts of low country are marshy and extremely unhealthful. Except in the Caspian provinces, the atmosphere of P. is remarkable above that of all other countries for dryness and purity.

The cultivated portions of P., when supplied with moisture, are very fertile, producing immense variety of crops. The chief cultivated products are wheat (best in the world), barley, and other cereals, cotton (of which, according to the statement of the Persian ambassador at London 1861, enough could be grown in the s. provinces to supply the manufactories of w. Europe), sugar, rice, and tobacco. The vine flourishes in several provinces, and the wines of Shiraz are celebrated in Eastern poetry. Mulberries are largely cultivated, and silk is one of the most important products of the kingdom.

The forests of the Elburz abound with wild animals—wolves, tigers, jackals, boars, buffaloes, foxes, and the Caspian cat. Lions and leopards also abound in Mazanderan. Among domestic animals, the horse and camel hold the first place. The horses have always been celebrated as the finest in the East: they are larger and more handsome, but less fleet, than the Arabian horses. The Caspian rivers abound with fish, especially sturgeon, great quantities of which are cured and exported to Russia. The mineral products of P. are insignificant, with the sole exception of salt. Iron is abundant in Azerbijan, but is little worked; copper occurs in considerable quantity in the mountains of Mazanderan and Kerman; and lead, antimony, sulphur, and naphtha also abound. Dr. Fulze, of the Imperial Austrian Mining School, who had been sent to P. by Baron Reuter to explore the mineral wealth of the country, reported, 1874, Jan., the discovery of an important coal-field.

*Inhabitants.*—The settled population are chiefly Tajiks, descendants of the anc. Persian race, with intermixture of foreign blood. To this class belong the agriculturists, merchants, artisans, etc. The Tajiks are Mohammedans of the Shiite sect, except the remaining Parsees or Guebres (q.v.), numbering (1868) 793, who are found in



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Kerman and Fars, and still retain their purity of race and religious faith. The Tajiks have been spoken of as timid, cunning, and servile, but in the cities of Turkistan recently conquered by Russia they make excellent subjects, ready and apt to adopt and appreciate the knowledge and habits of Europe. In the work quoted below, Vambéry speaks of their industry, and their capacity for and love of culture. He says that that which the Japanese are in the e. the Tajiks may become in the w. of Asia; and it is settled that they will form the medium for introduction of the civilization of the West into the interior of Asia. The nomad or pastoral tribes, or *eylats* (*eyl*, a clan), often spelt *illyats*, are of four distinct races—Turkomans, Kurds, Lûurs, and Arabs. Their organization is very similar to that which formerly subsisted among the Highland clans of Scotland, except that they are nomad, while the Scottish clans inhabited a fixed locality. Each tribe is ruled by its hereditary chief (*ujak*), and under him by the heads of the cadet branches (*tirehs*) of his family. Of the four nomad races, the Turkoman is most numerous, and is at the present day the ruling race in Persia. The Kurds are few, the greater part of their country and race being in the Turkish dominions. The Arabs also are few, and at the present day can scarcely be distinguished from the Persians, having adopted both their manners and their language. The Lûurs are of nearly pure Persian blood. The nomad races, especially the Turkomans, profess the Sunni creed; they are distinguished from the Tajiks by their courage, manliness, and independence of character; but they are inveterate robbers, and since their entrance into the country, in the 10th c., it has been continually distracted by civil wars and revolutions. There is a small population of native Christians—the Nestorians of Urmah and Telmais. Including those who have joined the Rom. Cath. and Prot. churches, their whole number does not exceed 25,000. They are agriculturists, and suffer great wrong and oppression from the chiefs who own the villages in which they live. The Jews number 15,000. [For total pop., see at end.]

The insecurity of property has prevented the improvement of land, the extension of trade, and public works of every kind. The roads are utterly neglected. The houses; those of the wealthiest people not excepted, appear contemptible, being generally of earth or mud, and are grouped, even in the towns, with little attention to uniformity or order. They scarcely ever exceed one story in height, and are surrounded by high blank walls. The public buildings, such as mosques, colleges, and caravansaries, are of similar appearance to the ordinary houses, and of the same materials. The interiors, however, of the abodes of the rich are sometimes paradises of luxury and elegance; and however offensive to a European eye may be dwellings constructed of mud, it is questionable whether, with all its disadvantages, mud is not a better building material than wood or stone in

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a country with such a climate as Persia. The miserable look of the towns is, however, greatly improved by the beauty of the gardens which surround the houses.

*Manufactures and Trade.*—The trade of P. is of little importance. Silk is the great staple, and is produced in every province, but chiefly in those of the north. The failure of the crop has frequently interfered seriously with this branch of industry. Cotton and woolen fabrics, shawls, carpets, and felts are largely manufactured for use and export in Khorassan. Trade is carried on by caravans with the interior of Asia and the chief towns of Persia. These caravans exchange the products of P. for muslin, leather, skins, nankeen, china, glass, hardware, gums, dye-stuffs, and spices. The greater part of the commerce of P. centres at Tabreez, to which are conveyed all the products of eastern P., Turkestan, Cabul, Beloochistan, and India. European goods are brought to Tabreez by Constantinople and Trebizond. While in recent times the great overland routes have been rendered insecure by the unsettled state of Turkestan and Afghanistan, the communication between P. and foreign countries has been increased by the Caspian and the Persian Gulf. On the former sea, 1873, there was a Russian fleet of schooners and screw steamers. Two or three of these vessels sailed weekly from Astrakhan with merchandise for the Persian coast. There were three passenger steamers, one of which ran weekly to the s. shores of the Caspian, touching at Entzdi, Mashadisar, and Ashurada. In the Persian Gulf the British India Steam Navigation Company had recently a regular line of fine steamers running fortnightly from Bombay to Bassorah, and touching at Bender-Abbas and Bushire. The exports to India consist chiefly of horses, dried fruit, and drugs; and the imports from that country and Europe, of broadcloths, cotton-goods, jewelry, arms, cutlery, watches, earthen, glass, and metal wares, etc. The whole foreign trade of P. has been estimated roughly at—imports \$12,500,000; exports \$7,500,000. British produce exported to P. (1875) was valued at \$222,213; (1901) \$5,701,665. Exports from P. to Britain in those years were valued at \$215,448 and \$709,770. It is doubtful how far the existing commerce of P. will make the construction of railways profitable. Baron Reuter, under a concession made to him by the shah, obtained power to construct railways from the Caspian to Teheran and from Teheran to the Persian Gulf; but there is now only a small railway open (6 miles).

*Government, Taxation, Education, etc.*—The government of P. is a pure despotism, limited only by domestic intrigues, dread of private vengeance, and an occasional insurrection. Insurrection is the principal check against unjust government on the part of the monarch, while the former two operate as powerful restraints on his ministers. The monarch, who has the titles of 'Shah' and 'Padishah,' possesses authority over lives and property of his subjects. His deputies, the

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governors of provinces and districts, possess similar authority over those under them; their actions, however, are liable to revision by the shah, who may summarily inflict any punishment on them for real or alleged misgovernment. Oppression of the working and mercantile classes is almost a necessity of such a form of government. The central government consisted till lately of the *Sadri-Azem* or Grand Vizier, with various dependent officials. Now there is a ministry, nominally modelled after the cabinets of European states, of which the head is called pres. of the council. He is supported by the ministers of foreign affairs and of war, of justice, of public worship and of mines, of commerce, telegraphs, agriculture, industry, and public works, the commander-in-chief, and the master of the ceremonies. The law, which in civil cases is administered by Mollahs (q.v.), in criminal cases by a state court, is founded on the Koran and on tradition. The usual punishments are fines, flogging (the bastinado), and death, by either decapitation, stabbing, or torture. The Beglerbegs or governors of provinces, always chosen from the governing race, the Turkomans, and generally of the blood-royal, oppress to the utmost the poor Tajiks. They are seldom able, however, to protect their provinces from the ravages of the predatory eylat hordes, who, though nominally subject to the shah, are governed by their own khans, and are really independent. The revenue is derived—

- (1) From a tax on the gross produce of land, 20 per cent. is supposed to be the amount payable to the crown by the landholders; as a general rule, however, this amount is somewhat exceeded, and 25 per cent. may be taken as the average assessment;
- (2) Duties on cattle and flocks—in case of goats, sheep, and cows, 8 per cent. on value of wool and butter yielded;
- (3) Customs dues;
- (4) Capitation tax of 16 cents on each male over 18 years of age;
- (5) Rates levied on incomes of artisans and dealers of 20 per cent., and duties on provisions brought to market.

In theory, these are the taxes authorized by the government; but R. Thomson states that in practice a frightful system of bribery and extortion prevails. The wealthy and powerful escape the rapacity of the provincial governors, but as much as possible is taken from the hard-working peasants. He believes that the irregular exactions amount to a sum equal to the legal assessments, and that not a penny of the money so extorted is applied to public purposes. Large sums are extorted from the Jews. The annual revenue 1872-82 was about \$9,500,000; \$7,500,000 being from direct taxes. Revenue (1886-7) \$8,505,000; of which from customs \$1,380,000, direct taxes \$7,144,200: expenditure \$7,921,800; revenue 1899-1900, about \$6,846,000.

Elementary education is very generally diffused among all classes. There are a large number of colleges where students are instructed in religion and Persian and Arabian literature. Among the upper classes it is asserted

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that the Mohammedan religion is rapidly losing its hold, and that unbelief is widely prevalent.

*Political Divisions, etc.*—From earliest times till the 19th c., P. was divided into seven or eight great divisions; but about the time when it was attempted to introduce European civilization into the country, and discipline into the army, the country was anew divided into 25 provinces—viz., the three Caspian provinces of Ghilan, Mazanderan, and Astrabad, in the n.; Azerbaijan, Ardelan or Persian Kurdistan, Luristan, and Khuzistan, in the w.; Fars, Laristan, and Kerman with Mogistan, in the s.; while the great province of Irak-Ajemi in the centre was divided into Khamsah, Kasbin, Teheran, Hamadan, Kûm, and Ispahan; and that of Khorassan in the e. into Yezd, Tabas, Ghayn and Birjun Turshiz, Meshid, Damghan, Semnum, and the Dasht Beyad, or the Great Salt Desert. There are many interesting ruins of ancient, populous, and celebrated cities in Persia—e.g., Persepolis (q.v.), Rhages or Rhé, Shahpur, Istakhar, Tûs, Merv, Shushan, Hamadan, etc.; and the monuments and inscriptions found at some of these places form a highly-interesting study. See BEHISTUN.

*Army.*—The standing army, according to the recent army laws, consists of 105,500 men, but the majority of these exist only on paper. The regular army is really composed of about 35,400 infantry and 2,600 artillery, while there are about 3,300 irregular cavalry, a few thousand irregular infantry, and the guards. The officers in the Persian army are said to be ignorant and inefficient, but the soldiers are described as obedient, sober, intelligent, and capable of enduring great fatigue. The irregular cavalry, which forms the bravest portion of the Persian army, is equal to the Cossacks in the Russian army, and much superior to the Turkish sultan's Bashi-Bazouks.

*History.*—According to the *Shah Nameh* of Firdusi (q.v.), the history of P. begins thousands of years before the Christian era. Little has been done toward extracting the grains of historical truth that may be contained in the mass of fable that constitutes the native Persian annals; though hopes are cherished that by aid of the many inscriptions and monuments daily discovered, light may yet be thrown on many points. In the mean time, we must rest contented with the accounts derived from Greek writers. The n.w. part of Iran, anc. Media (q.v.), was, at the earliest period known to the Greeks, a part of the Assyrian empire, but the Medes revolted, and B.C. 708, under Dejoces, established an empire which subdued both that of Assyria and their own kindred tribes of Persis: see MEDIA.—About B.C. 537 the Persians under CYRUS (q.v.)—the Kai-Khusru of the Persians—(reigned B.C. 559–529) rebelled, subdued their former masters, the Medes (who from this time became amalgamated with them), and established a mighty empire, which included, besides P., as far as the Oxus and Indus. Asia Minor. Syria. Palestine, and Mesopotamia.—

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His son, CAMBYSES, a most ferocious and blood-thirsty tyrant (reigned B.C. 529-522), subdued Tyre, Cyprus, and Egypt.—After the brief rule of the usurper SMERDIS (B.C. 522-521), DARIUS I. (q.v.), surnamed HYSTASPES—the Gushtasp of the Persians—(B.C. 521-485), mounted the throne. He was a politic and energetic prince, firmly established his dynasty, and added Thrace and Macedonia to his empire; but his two attempts to subdue Greece were completely foiled, the first by the Thracians, and the second by the Athenians at Marathon (B.C. 490).—His son, XERXES I. (B.C. 485-465)—the Isfundear of the Persians—renewed the attempt to subdue the Greek states, and though at first successful, was by the defeats of Salamis and Plataea compelled to limit himself to a defensive warfare which exhausted the resources of his kingdom.—His son, ARTAXERXES I. (B.C. 465-425), surnamed LONGIMANUS (the Bahman of the Persians, better known as Ardeshir Dirazdust), was a valiant prince, but unable to stay the decadence of P., which had commenced. He, however, crushed a formidable rebellion in Egypt, though his wars with the Greeks and Ionians were unsuccessful. The empire then became a prey to intestine dissensions, which continued during the reigns of his successors, Xerxes II., Sogdianus, Darius II., Artaxerxes II., and Artaxerxes III.—DARIUS III. CODOMANNUS (B.C. 336-329) (the Darab II. of the Persians), the last of the dynasty, was compelled to yield his throne to Alexander (q.v.) the Great, King of Macedon (known as Secunder by the Persians), who reconquered all the former provinces of P., and founded a vast empire, which, at his death B.C. 324, was divided into four parts, P. with Syria falling to the share of the Seleucidæ (q.v.), and its old dependency, Egypt, to the Ptolemies (q.v.). The Seleucidæ soon lost Bactria (now Balkh), which became independent under a series of Greek sovereigns; and about B.C. 246 Parthia (q.v.)—now northern Khorassan—also rebelled under ARSACES I. (the Ashk of the Persian writers), who founded the dynasty of the Arsacidæ, under whom the greater part of P. was wrested from the Greeks, and maintained against both the Greeks and the Romans. The Greek empire of Bactria, said to have included great part of Hindustan, was overthrown by an influx of nomad tribes from Turkestan, and these invaders having been driven out by the Parthians, Bactria was added to their empire.—But the dynasty of the Arsacidæ was brought to an end by a Persian, Ardeshir Babegan, who managed to gain possession of Fars, Kerman, and nearly the whole of Irak, before Arduan, the Parthian king, took the field against him. At last, a great battle was fought (A.D. 218) on the plain of Hormuz, in which the Persians were completely victorious. Babegan was now hailed as Ardeshir, King of P., and 'Shahan Shah,' or king of kings. For the history of this dynasty, see SASSANIDÆ. The Sassanian kings raised P. to a height of power and prosperity such as it never before attained, and more than once

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perilled the existence of the Eastern Empire. The last king was driven from the throne by the Arabs (636), who then began to extend their dominion in all directions; and from this period may be dated the gradual change of character in the native Persian race, for they have been from this time constantly subject to the domination of alien races. During the reigns of Omar (first of the Arab rulers of P.), Othman, Ali, and the Ommiades (634-750), P. was regarded as an outlying province of the empire, and was ruled by deputy-governors; but after the accession of the Abbaside dynasty (750), Bagdad became the cap., and Khorassan the favorite province of the early and more energetic rulers of this race, and P. consequently came to be considered as the centre and nucleus of the caliphate. But the rule of the caliphs soon became merely nominal, and ambitious governors, or other aspiring men, established independent principalities in various parts of the country. Many of these were transitory; others lasted for centuries, and created extensive and powerful empires. The chief were the TAHERITES (820-872), a Turkish dynasty in Khorassan; the SOFFARIDES (Persian, 869-903), in Seistan, Fars, Irak, and Mazanderan; the SAMANI, in Transoxiana, Khorassan, and Seistan; the DILEMI (Persian, 933-1056), in w. Persia; and the GHIZNEVIDES (q.v.), in e. Persia. These dynasties supplanted each other, and were finally rooted out by the Seljuks (q.v.), whose dominion extended from the Hellespont to Afghanistan. A branch of this dynasty, which ruled in Khaurezm (now Khiva, q.v.), gradually acquired the greater part of P., driving out the Ghiznevides and their successors, the GHÛRI (q.v.); but they, with the numerous petty dynasties which had established themselves in the s.w. provinces, all were swept away by the Mongols (q.v.) under GENGHIS KHAN (q.v.) and his grandson, Hulaku Khan, the latter of whom founded a new dynasty, the PERSO-MONGOL (1253-1335).—This race, becoming effeminate, was supplanted by the EYLKHANIANs 1335, but an irruption of the Tartars of Turkestan under TIMÛR (q.v.) again freed P. from the petty dynasties which misruled it.—After the death of Timûr's son and successor, Shah Rokh, the Turkomans took possession of the w. part of the country, which, however, they rather preyed upon than governed; while the e. portion was divided and sub-divided among Timûr's descendants, till, at the close of the 15th c., they were swept away by the Uzbeks (q.v.), who joined the whole of eastern P. to their newly founded khanate of Khiva.—A new dynasty then arose (1500) in western P., the first prince of which (Ismail, descendant of a long line of devotees and saints, objects of high reverence throughout western P.), having become the leader of a number of Turkish tribes attached by strong ties of gratitude to his family, overthrew the power of the Turkomans, and seized Azerbaijan, the seat of their power. Ismail rapidly subdued the w. provinces, and 1511 took Khorassan and Balkh from the Uzbeks: but

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1514 he had to encounter a much more formidable enemy—the mighty Selim (q.v.), Sultan of Turkey, whose zeal for conquest was further inflamed by religious animosity against the Shiites, or ‘Sectaries,’ as the followers of Ismail were termed. The Persians were totally defeated in a battle on the frontiers; but Selim reaped no benefit from his victory, and, after his retreat, Ismail attacked and subdued Georgia. The Persians dwell with rapture on the character of this monarch, whom they deem not only the restorer of P. to a prosperous condition, and the founder of a great dynasty, but the establisher of the faith in which they glory as the national religion.—His son Tamasp (1523–76), a prudent and spirited ruler, repeatedly drove out the predatory Uzbeks from Khorassan, sustained without loss a war with the Turks, and assisted Homayun, son of Baber, to regain the throne of Delhi.—After a period of internal revolution, during which the Turks and Uzbeks attacked the empire without hindrance, Shah Abbas I. the Great (1585–1628) ascended the throne, restored internal tranquillity, and repelled the invasions of the Uzbeks and Turks. In 1605 he inflicted on the Turks such a terrible defeat as kept them quiet during the rest of his reign, and enabled him to recover the whole of Kurdistan, Mosul, and Diarbekir, which had long been separated from P.; and in the e., Candahar was taken from the Great Mogul. Abbas’s government was strict, but just and equitable; roads, bridges, caravansaries, and other conveniences for trade, were constructed at immense expense, and the improvement and ornamentation of the towns were not neglected. Ispahan more than doubled its pop. during his reign. His tolerance was remarkable, considering both the opinions of his ancestors and subjects; for he encouraged the Armenian Christians to settle in the country, well knowing that their peaceable and industrious habits would advance the prosperity of his kingdom.—His successors, Shah Sufi (1628–41), Shah Abbas II. (1641–66), and Shah Soliman (1666–94), were undistinguished by any remarkable talents; but the former two were sensible and judicious rulers, and advanced the prosperity of their subjects.—During the reign of Sultan Hussein (1694–1722), a weak and bigoted fool, priests and slaves were elevated to the most important and responsible offices of the empire, and all who rejected the tenets of the Shiites were persecuted. The consequence was a general discontent, of which the Afghans (q.v.) took advantage by declaring their independence, and seizing Candahar (1709). Their able leader, Meer Vais, died 1715; but his successors were worthy of him, and one of them, Mahmud, invaded P. (1722), defeated Hussein’s armies, and besieged the king in Ispahan, till the inhabitants were reduced to the extremity of distress. Hussein then abdicated the throne in favor of his conqueror, who, on his accession, immediately devoted his energies to alleviate the distresses and gain the confidence of his new subjects, in both of which

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objects he thoroughly succeeded. Becoming insane, he was deposed 1725 by his brother Ashraf (1725–29); but the atrocious tyranny of the latter was speedily ended by the celebrated Nadir Shah (q.v.), who first raised Tamasp (1729–32) and his son, Abbas II. (1732–36), of the Suffavean race, to the throne, and then, on some frivolous pretext, deposed him, and seized the sceptre (1736–47).—But on his death, anarchy returned; the country was horribly devastated by rival claimants for the throne; Afghanistan (q.v.) and Beloochistan (q.v.) finally separated from P., and the country was split into a number of small independent states till 1755, when a Kurd, Kerim Khan (1755–79), abolished this state of affairs, re-established peace and unity in western P., and by his wisdom, justice, and warlike talents, acquired the esteem of his subjects, and the respect of neighboring states.—After the usual contests for the succession, accompanied with the usual barbarities and devastations, Kerim was succeeded 1784 by Ali-Murad, Jaafar, and Luft-Ali, during whose reigns Mazanderan became independent under Aga-Mohammed, a Turkoman eunuch of the Kajar race, who repeatedly defeated the royal armies, and ended by depriving Luft-Ali of his crown (1795). The great eunuch-king (as he is frequently called), who founded the present dynasty, on his accession announced his intention of restoring the kingdom as it had been established by Kerim Khan, and accordingly invaded Khorassan and Georgia, subduing the former country almost without effort. The Georgians besought the aid of Russia; but the Persian monarch, with terrible promptitude, poured his army like a torrent into the country, and devastated it with fire and sword; his conquest was, however, hardly completed, when he was assassinated, 1797, May 14.—His nephew, Futteh-Ali (1797–1834), after numerous conflicts, fully established his authority, and completely subdued the rebellious tribes in Khorassan; but the great commotions in w. Europe produced for him bitter fruits. He was dragged into a war with Russia soon after his accession, and by a treaty 1797 surrendered to that power Derbend and several districts on the Kur. In 1802 Georgia was declared a Russian province. War with Russia was recommenced by P., at the instigation of France; and, after two years of conflicts disastrous to the Persians, the treaty of Gulistan (1813, Oct. 12) gave to Russia all the Persian possessions n. of Armenia, and the right of navigation in the Caspian Sea. In 1826 a third war, equally unfortunate for P., was commenced with Russia, and cost P. the remainder of its possessions in Armenia, with Erivan, and a sum of 18,000,000 rubles for expenses of the war. The severity exercised in procuring this sum by taxation so exasperated the people, that they rose in insurrection (1829, Oct. 12), and murdered the Russian ambassador, his wife, and almost all who belonged to or were connected with the Russian legation. The most humiliating concessions to Russia, and the punishment by mutilation of 1,500 of the rioters,



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were required to avert war. The death of the crown-prince, Abbas-Mirza (q.v.), in 1833, seemed to give the final blow to the declining fortunes of P., for he was the only man who seriously attempted to raise his country from the abasement into which it had fallen.—By the assistance of Russia and Britain, Mohammed Shah (1834–48), son of Abbas-Mirza, obtained the crown. He conceived ambitious ideas of annexation. In the days of Nadir Shah, and indeed at many other periods, the Persian frontier had extended over a great part of the Afghan, Belooch, and Khivan boundary. Mohammed resolved to demand reacknowledgment of sovereignty from his alleged vassals in these countries, but his attempt to reannex Herat, ‘the key to India,’ was resisted by England. The war was terminated 1838, by the landing of a small sepoy force on the shores of the Persian Gulf.—Nazir-uddin succeeded to the throne on his father’s death 1848; and the new govt. announced energetic reforms, but failed as completely as those which had preceded it in carrying them out. Following his father’s example, the new shah resolved to reassert his claims in Afghanistan and Beloochistan. The ruler of Herat having recognized the claims of Persia, the English govt. remonstrated with the shah, and he was compelled to sign an engagement 1853, Jan. 25, by which he became bound not to interfere farther with the internal affairs of Herat. 1856, Oct., however, on the pretext that Dost Mohammed, the Ameer of Cabul, was about to invade Herat, the Persians again took the city. Having thus violated the terms of the treaty with Britain, war was declared against them, and a British army was landed on the coast of the gulf, which, under Generals Outram and Havelock, repeatedly defeated the Persians, and compelled them to restore Herat 1857, July. Since this time the Persians have not interfered with ‘the key to India,’ to which so much importance has been attached by England; but they have been engaged in a long series of disputes with regard to their frontier n. and s. of it. After the war of 1857, their encroachments became systematic. In 1868 they occupied Seistan, a province claimed by the Afghans, and extended their jurisdiction over the western third of the country, appearing on the maps as Beloochistan. To put an end to the incessant strife to which these pretensions gave rise, the Persians at length agreed with the ameer of Afghanistan and the Khan of Kelat to refer the questions in dispute to an English commissioner. General Sir Frederick Goldsmid accordingly visited the e. frontier of P., and in 1872 delivered his award. It entirely alters the form long familiar as that of s.e. P. It carries the Belooch frontier back from 58° to 63° e. long., so as to include in P. the inland town of Jalk, and Guadar on the Indian Ocean. All the w. shores of the Lake of Zirreh, and a large triangular tract e. of it, watered by the Helmund, also are annexed to Persia. By the treaty of Berlin 1878, the town and territory of Khotour, on the Turco-Persian

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frontier, was ceded to P. by Turkey. The n.e. frontier was settled by a treaty between Russia and Persia 1881. The Atrek is the frontier as far as Shat; then the boundary runs n.e. to the ridge of the Kopet Dagħ, which it follows s.e. to a point a little s. of Askabad: thence to Sarakhs, which is Persian. From Sarakhs the e. frontier runs s. along the river Hari Rud, and so s. to Lake Seistan. The great extension of Russian territory and Russian power on the n.e., while overshadowing P. to some extent, has had the beneficial effect of sheltering the adjoining regions of P. from the terrible inroads of the Tekke and other Turkomans, now under Russian authority.—Englishmen did much to explore n.e. Persia in connection with the establishment 1872 of the Anglo-Indian telegraph line from London to Teheran through Russia, and by the e. shore of the Black Sea, in conjunction with the Persian land-telegraph system and the Bushehr-Karachi line.

*Population.*—We have no certain information regarding the pop. of Persia. Doubtless in antiquity, and even during the middle ages, while the irrigation works still fertilized great tracts of country, it supported a great population. A native estimate, referred to by Sir John Malcolm, fixed the modern pop. at 200 millions. In the 17th c., the French traveller Chardin thought 40 millions not too high a figure. Recent travellers, however, reduced these sums to numbers varying from 15 to 8 millions. Much surprise was accordingly expressed when R. Thomson (see below), who had travelled in every province of P., and collected statistical information, made careful calculation from the taxes collected, etc., and reported that the entire pop. did not exceed 5 millions, and was probably not over 4 millions. His estimate was generally accepted as the most trustworthy of any; though probably a higher number would now be assigned by most statisticians. He divides the total roughly into 1,000,000 inhabitants of cities, 1,700,000 nomads, and 1,700,000 peasants and villagers; and the following are his estimates of the pop. of the chief cities: Tabreez, 110,000; Teheran, 85,000; Meshid, 70,000; Ispahan, 60,000; Yezd, 40,000; Kerman, 30,000; Kermanshah, 30,000; Hamadan, 30,000. Undoubtedly the pop. has long been diminishing, a fact attributable to misrule and extortion—neglect of the great irrigation works—and frequent famines in a dry country where cultivation depends on artificial supply of water. A British statement (1890) gave pop. 7,653,600; (1902) 9,500,000.

See Mr. Thomson's official *Report on Persia* (1868); *History of Persia*, by Watson (1873); *History of Persia*, by G. C. R. Markham (1874); *Central Asia and the Anglo-Russian Frontier Question*, by A. Vambery (1874); *Through Persia*, by Arnold (1876); *Persia*, by Goldsmid (1880); F. Martin's *Statesman's Year-Book*; S. G. W. Benjamin's *Story of Persia* (1886), *Persia and the Persians* (1886). Also German works on Persia by Spiegel (1863), Brugsch (1864), Polak (1865).

## PERSIAN—PERSIAN ARCHITECTURE.

PERSIAN, a. *pér'shän*, or PERSIC, a. *pér'sik*: from or relating to *Persia*: N. the language of *Persia*. PERSIAN BERRY, a yellow dye-stuff. PERSIAN WHEEL, a large wheel surrounded with buckets for raising water from a low to a high level. PERSIANS, n. plu. *pér'shänz*, in *arch.*, sculptured male figures used instead of columns.

PER'SIAN ARCHITECTURE: architectural style interesting both on its own account, and as supplementary to and explanatory of that of Assyria, which, with the similar architecture in Egypt, is the earliest of which we have any knowledge. The buildings of Persia and Assyria closely resemble each other; and, because of the mode and the materials in which they were constructed, their remains illustrate and complete each other's history. In Assyria, where no natural solid building materials exist, the walls are composed of masses of sun-dried brickwork, lined on the inside, to a certain height from the floor, with large sculptured slabs of alabaster. These have been preserved to us by the falling in of the heavy earthen roofs, with which, as the later Persian buildings reveal to us, the Assyrian palaces were covered. The explorations of Layard and Botta, and the specimens brought home by the former and now in the British Museum, have made these sculptures familiar to us. The subjects usually are large bulls with human or lions' heads; priests with human bodies and eagles' or lions' heads, performing religious service before the 'sacred tree.' The Assyrian remains all are of palace-temples, buildings somewhat resembling the Egyptian temples (which were also palaces); and many of the sculptures represent the exploits of the king in war and in peace. The palaces are always raised on lofty artificial mounds, and approached by magnificent flights of steps.

The buildings of Assyria extend over a very long period, the oldest at Nimrud dating B.C. 1300-800, and the more recent at Khorsabad and Koyunjik B.C. 800-600. To these succeeded Babylon in the reign of Nebuchadnezzar, and the Birs Nimrud; but these are mere masses of decomposed brickwork, without any sculptures of harder material.

After Babylon came Pasargadæ—where are still the ruins of the splendid palaces of Cyrus and Cambyses—and Persepolis (q.v.), cap. of Darius and Xerxes (B.C. 560-523); and some remains are still found at Susa, Ecbatana, and Teheran. At Persepolis, we find the very parts preserved which at Nimrud and Khorsabad are lacking; for here is abundance of stone, and the pillars, walls, doorways, etc. (which, in the early examples, were no doubt of wood, and have decayed), being of stone, are still preserved. This has enabled Mr. Fergusson to 'restore' these buildings, and to produce most interesting designs, showing not only how the palaces of Persia were constructed and lighted, but from them suggesting how the arrangements of all the ancient architecture of Egypt and Syria must have been designed.

The halls at Persepolis were square in plan, having an

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equal number of pillars in each direction for the support of the roof, which was flat. In the centre, a portion was left open for the admission of light, and sheltered by another roof raised upon pillars. The accompanying section (fig. 1) of the Great Hall of Xerxes (from Fer-

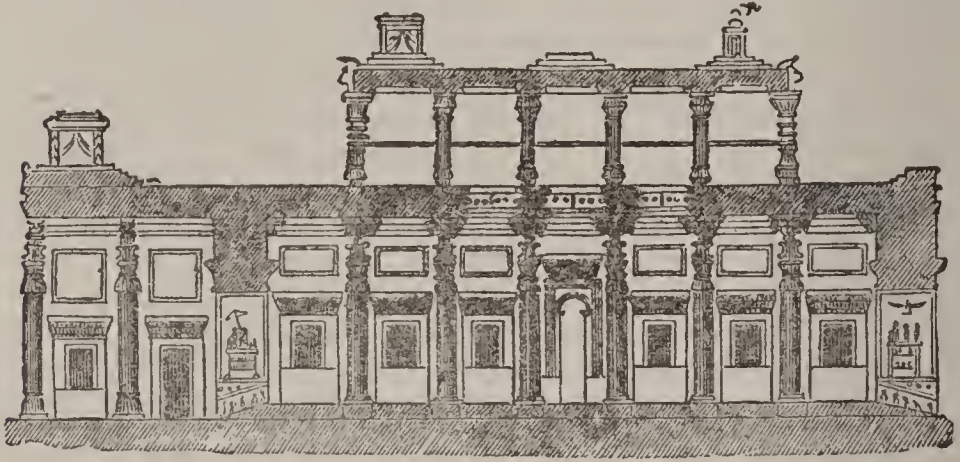


Fig. 1.—Section of Hall of Xerxes at Persepolis.

gusson's *Handbook of Architecture*) will explain this arrangement. This hall is the most splendid building whose remains exist in that part of the world. The remains of the 72 columns with which it was adorned are still extant (fig. 2). The hall had 36 columns, six on each side, and on three sides had an external portico, each with two rows of six columns. These columns had capitals, composed of bulls' heads and shoulders (fig. 3),

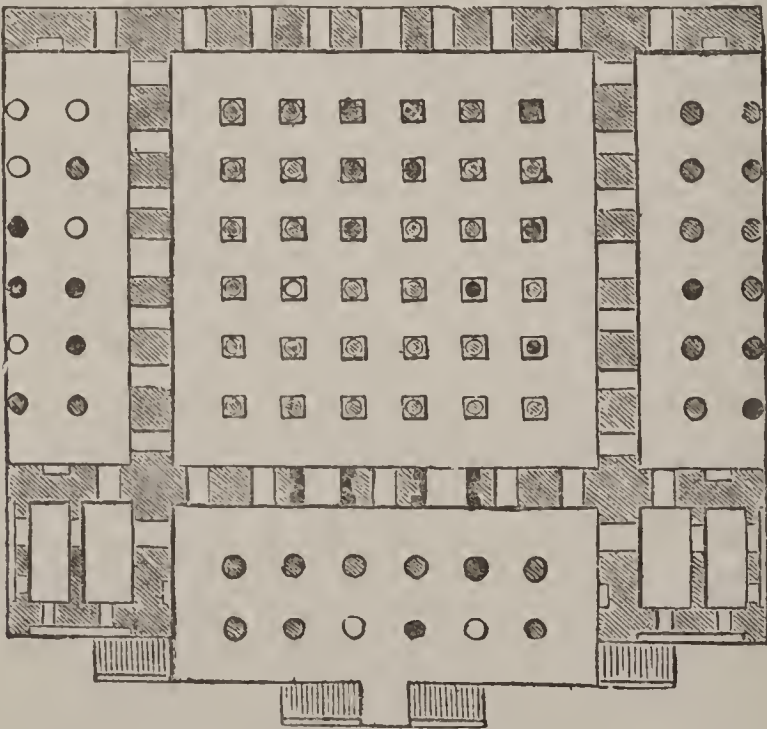


Fig. 2.—Plan of Great Hall of Xerxes at Persepolis.

between which the beams of the roof rested; while others were ornamented with scrolls like the Ionic order (fig. 4). The bases also are suggestive of the origin of that Greek style. This hall was 350 ft. by 300, and covered more ground than any similar buildings of antiquity,

## PERSIAN GULF.

or any mediæval cathedral except that of Milan. The palaces of Persepolis stand on lofty platforms, built with walls of Cyclopean masonry, and approached by magnificent flights of stairs, adorned, like the palaces, with

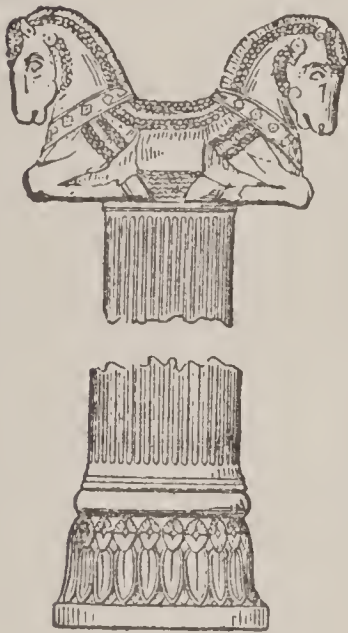


Fig. 3.

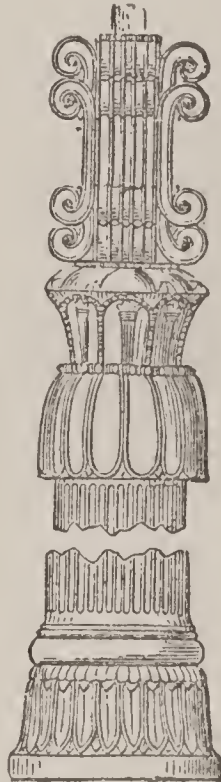


Fig. 4.

Details of Persian Architecture.

sculptures somewhat similar to those of Assyria. The interiors were ornamented with paintings. The use of the arch was known in Assyria, as has been shown by the subterranean arched conduits discovered by Layard, and the gates of Khorsabad discovered by Place. The arches of the latter spring from the backs of sculptured bulls, and are beautifully ornamented with enamelled bricks.

**PERSIAN GULF:** arm of the Indian Ocean which penetrates between Arabia and Persia to the extent of 650 English m. in a general n.w. direction. Its breadth varies from 55 m. at the mouth to 250 m., and the area is estimated at 117,300 sq. m., from which about 1,930 sq. m. must be subtracted for the islands scattered over the w. half, or lying close inshore along the e. side. The chief of these islands are Ormuz (q.v.), at the mouth; Kishm, 810 sq. m. in extent; and the Bahrein Islands (q.v.), chief of which is Samak. The Great Pearl Bank stretches along the w. side from Ras Hassan to nearly half-way up the gulf. The coast is mostly of calcareous rocks. On the Arabian side, it is low and sandy, occasionally broken by mountains and cliffs; on the Persian side, it is higher and abrupt, with deep water close inshore, owing to the mountain-ranges of Fars and Laristan running close to the water's edge. The islands are partly of limestone and partly of ironstone, and gen-

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erally destitute of springs, barren, desolate, with numerous traces of volcanic eruptions. With the exception of the Shat-el-Arab (q.v.), the P. G. receives only insignificant streams. Its e. side presents abundance of good anchorage, either in the numerous bays or in the lee of islands. The greater portion of its shores now belongs to the imaum of Muscat. The coasts of the gulf have been explored by successive British expeditions, the last of which, 1821–25, made a complete trigonometric survey of the Arabian shore. The order of the periodic currents in this gulf is precisely the reverse of that of the Red Sea (q.v.) currents, as the gulf currents ascend from May to Oct., and descend from Oct. to May. Oriental geographers give to this gulf the name 'Green Sea,' from a remarkable strip of water of green color along the Arabian coast. It is strange that from the time of Nearchus, admiral of Alexander the Great, who was the first to make the P. G. known to Europeans, the Persians have never ruled supreme over its surface.

PER'SIAN LANGUAGE AND LITERATURE: ancient and modern idioms of Persia, in general designated as Iranian or West Aryan, belonging to the great class of the Indo-Germanic languages; and more specifically the language as it is now spoken, with a few exceptions, throughout Persia and in a few other places formerly under Persian dominion, like Bokhara, etc. The more important and better known of the ancient idioms are the following: (1) the *Zend* (the East Iranian or Bactrian language, in two dialects—the 'Gátha idiom,' and the 'ancient' or 'classical Zend'), which died out B.C. 3d c.—one of the most highly developed idioms, rich in inflections, in the verbs as well as in the nouns, and in the former almost completely agreeing with Vedic Sanskrit; yet such as we find it in the small remains which have survived, it is no longer in full vigor of life, but almost decaying, and grammatically somewhat neglected; it is in fact held by a great authority on the subject (Haug), that the grammar was never fixed in any way by rules. As increasing the difficulty, the texts—the Zoroastrian books—seem never to have been copied with proper care, or by men who had any correct knowledge of the language; so that the critical restoration of the literary remains is extremely difficult, and Zend studies in general may be said to be in their infancy yet. Geographically, this idiom may be placed in northern Persia. Its alphabet is of Semitic origin, and the writing goes from right to left (see ZEND: ZEND-AVESTA). (2) *Ancient Persian*, whose chief remnants are in the cuneiform inscriptions of the time of the Achæmenides, discovered in the ruins of Persepolis, on the rock of Behistun, and some other places of Persia (see CUNEIFORM). Some relics, consisting chiefly of proper names for gods and men, and terms for vessels and garments, have survived in the writings of the classical period, and in the Bible, chiefly in the Book of Dan-

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iel. This idiom is much nearer to Zend and Sanskrit than to modern Persian. It has still the structure of an ancient organic Indo-Germanic language, with the distinct peculiarities of an Iranian tongue. (3) *Pahlavi* (q.v.) (West Iranian, Median, and Persian), in use during the period of the Sassanides (after Christ 3d to 7th c.), an idiom largely mixed with Semitic words, and poorer in inflections and terminations than Zend. Its remnants consist of a certain number of books relating to the Zoroastrian religion, of coins and inscriptions; and the language is not quite the same in all cases—according to the larger or smaller infusion of foreign words. The non-Iranian element is known as Huzvaresh, and is simply Chaldee; while the Iranian element differs little from modern Persian. There are three distinct idioms to be distinguished in Pahlavi, and the writing varies accordingly; yet it is not certain whether the difference arises from their belonging to different districts or periods. When, however, Pahlavi ceased to be a living language, and the restoration of the pure Iranian had begun, people, not daring to change the writings, chiefly of a sacred nature, as they had descended to them from the Sassanian times, began to substitute, in reading, the Persian equivalents to the Huzvaresh words. At last a new form of commentaries to the sacred writings sprang up, in which more distinct and clear Zend characters were used, where each sign has but one phonetic value, and where all the foreign Huzvaresh words were replaced by pure Persian ones; and this new form was called (4) *Pâzend*. The transition from the ancient to the modern Persian is formed by the *Parsee*, or, as the Arabs call it, *Farsi*, in use 700–1100, once the language purely of the s.w. provinces, and distinguished chiefly by a peculiarity of style, rigid exclusion of Semitic words, and certain now obsolete forms and words retained in liturgic formulas. It is the Persian anciently written by the Parsees or fire-worshippers, and is in other respects very similar to the present or *modern Persian*, the language of Jâmi, Nizâmi, and Hâfiz—from 1100 to the present time—with its numerous dialects. The purest dialect is said to be that spoken in Shiraz and Ispahan and their neighborhood. In general, this language is deemed by universal consent the richest and most elegant of those spoken in modern Asia. It is the most sonorous and muscular, while it is among the most elegant and most flexible of idioms; and it is not strange that, throughout the Moslem and Hindu realm, it should have become the court language, and that of the educated world in general; holding a position somewhat similar to that which the French language held till a recent period in Europe. Its chief characteristic, however, is the enormous intermixture of Arabic words, which, indeed, make almost half its vocabulary. Respecting its analytical and grammatical structure, it exhibits traces only of that of the ancient dialects of Zend and Achæmenian, of which it is a direct descendant.

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The elaborate system of forms and inflections characteristic of those dialects has been utterly abandoned for combinations of auxiliary words, which form independent connective links, and which impart fulness and a surprising ease to speech and composition, but which, at the same time, correspond as little to the classical notion of inflection. The grammar of the Persian language has been called 'regular;' but the fact is, that there is hardly any grammar worth mentioning—at all events, no grammar whose rules could not be mastered in a very short time. To begin with: there is no gender distinguished in declension; the plural is always formed in the same manner, the only distinction consisting in animate beings receiving the affix *ân*, while the inanimate are terminated in *hâ*; further, that instead of the inflection in the different cases, found in the ancient languages, either a *mar* (hitherto unexplained) is prefixed, or a *râ* (*râh* = way, by reason of—Pahlavi, Parsi) is affixed. Between the genitive and the word which governs it, also between a noun and its following adjective, an *i* is inserted. This is the whole declension, not only of the noun, but also of the adjective and pronoun. The comparative is formed, as in the mother-tongues, by the addition of *ter*; the superlative adds *terîn*, which is New-Persian exclusively. Not even the pronouns have a gender of their own; the distinction between masculine and feminine must be expressed by a special word, denoting male or female. There is no article, either definite or indefinite. Singularity of a noun is expressed by an appended *ê*, remnant of *aêra*, one. The flexion of the verb is equally simple. There is a set of personal terminations for all tenses—*am*, *i*, *ad* or *ast*; *êm*, *êd*, *nd*; the infinitive ends in *tan* or *dan*, the past participle in *tah* or *dah*. The aorist is formed by adding to the root the terminations *am*, *i*, *ad*; *em*, *ed*, *and*; the preterite by dropping the *n* of the infinitive, and substituting the usual terminations. The prefix *mi* or *hami* (Parsi and Huzvaresh = always) transforms the preterite into the imperfect; while the prefix *bi* or *bih* (the present of the verb 'to will') alters the aorist into the simple future. The other tenses are compounds of the past participle and auxiliary verbs, as in the Teutonic and other modern tongues. The passive is formed by the various tenses of the verb *shudan*, 'to be, to go, to beware,' being placed after the past participle. As to syntax, there is none, or, at all events, none which would not come almost instinctively to any student acquainted with the general laws of speech and composition. The time of its greatest brilliancy may be designated as that in which Firdusi wrote, when Arabic words had not swamped it to the vast degree in which it is now found, and were still, as far as they had crept in, amenable to whatever rules the Persian grammar imposed upon the words of its own language.

In the history of the Persian writing, three epochs are distinguished. First, is the Cuneiform (q.v.), by



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the side of which there seems, however, to have been in use a kind of Semitic alphabet for common purposes. This, in the second period, appears to have split into several alphabets, all related to each other, and pointing to a common Syriac origin (such as the different kinds of Pahlavi characters and the Zend alphabet) cleverly adapted to the use of a non-Semitic language. In the third period, the Arabic alphabet is found, enlarged for Persian use by an addition of diacritical points and signs for such sounds as are not in Arabic (*p, ch, zh, g*). The characters are written in a somewhat more slanting manner (*Talik*) in Persian, and the writing is thus slightly different from the usual Arabic *Neski*.

The much-spoken-of close connection between German and Persian—both of Indo-Germanic kin—is merely a popular fallacy, caused by a misunderstood dictum of Leibnitz: ‘*Integri versus Persice scribi possunt quos Germanus intelligat,*’ which was enthusiastically taken up and ‘proved’ by Adelung, Hammer-Purgstall, and others; and which has even led to the assumption, that the Germans came directly from Persia, or that the Goths once were mixed with the Persians. We mention it as a philological absurdity of by-gone days.

For the Literature of the Persians before the Mohammedan conquest, see *ZEND: PAHLAVI: PARSEES: ETC.* The literary period now under consideration is distinguishable by the above-mentioned infusion of Arabic words into the Persian language, imported together with the Koran and its teachings. The writers are, in fact, one and all, Mohammedans. With the fanaticism peculiar to conquering religions, particularly to Islam, all the representatives of old Persian literature and science, men and matter, were ruthlessly persecuted by Omar’s general, Saad Ibn Abi Wakkas. The consequence was, that, for the first two or three centuries after the conquest, all was silence. The scholars and priests who would not bow to Allah and his Prophet and to the new order of things, and who had found means to emigrate, took with them what had not been destroyed of the written monuments of their ancient culture; while those that remained at home were forced to abandon their wonted studies. Yet, by slow degrees, as is invariably the case under such circumstances, the conquered race transformed the culture of the conquerors to such a degree, that native influence soon became paramount in Persia, even in theology—the supreme science. It is readily granted by later Mohammedan writers, that out of the body of the Persians exclusively sprang the foremost scholars, if not all the greatest scholars and authors, on religious as well as grammatical subjects, historians and poets, philosophers and men of science; and the only concession that they made consisted in their use of the newly imported Arabic tongue. A further step was taken when, after the Islam sway had ceased, the Persians, under upstart

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native dynasties, returned also to the ancient language of their fathers during the first centuries of Moham-medanism. The revived national feeling, which must have been stirring for a long time previously among the masses, then suddenly burst forth in prose and in verse, from the lips of a thousand singers and writers. The literary life of Persia, the commencement of which is thus to be placed in the 9th c. after Christ, flourished with unabated healthy vigor for five centuries, and produced a host of writers in every branch of science and belles-lettres, of whom we can here give only a rapid survey, referring for the most important names to the special titles throughout this work. Beginning with poetry, we hear, under the rule of the third of the Samanides, Nasr (about 952), of Abul Hasan Rudegi, the blind, who rose by the king's favor to such eminence that he had 200 slaves to wait upon him. But little has remained of his 1,300,000 distichs, and of his metrical translation of Bidpai's Fables. About A.D. 1000, we hear of Kabus, the Dilemite prince, as author of *The Perfection of Rhetoric*, and poems. In the time of the Gasnevites, chiefly under Mahmud, who surrounded himself with no less than 400 court-poets, we find those stars of Persian song—Ansari (1039), author of *Wamik and Asra*, and 30,000 other distichs and Kassidahs in honor and praise of the king; further, Ferruchi, who, besides his own poems, wrote also the first work on the laws of the Persian metrical art; and, above all, Firdusi (q.v.), greatest epic poet, author of the *Shah Nameh*, or Book of Kings; who lived one of the most brilliant and romantic lives that ever fell to the lot of genius, and ended it forgotten and in misery. With him, but darkened by his brightness, flourished Esemi, his countryman, from Tus. Among the poets under the Atabek dynasty, we find that most brilliant Persian panegyrist, Anhad Addin Enweri, who, with his praise, well knew how to handle satire. The best of the older mystic poets of that period is Senayi, author of 30,000 distichs, who for his poem *Hadikat* was nominated official singer of the Sufis. Nizami (about 1200) is founder of the romantic epos; the greater part of his *Chamshe*, or collection of five romantic poems (*Chosru and Shirin, Mejnun and Leila*, etc.), being almost as well known in Europe as it is in the East; and to whom Kisilarslan the king presented for one of these poems no less than fourteen estates. His grave at Gendsheh is still visited by many a pious pilgrim. And here it is to be noted that the branch of Eastern theosophical literature pre-eminently cultivated in Persia is the mystic (Sufistic) poetry, which, under Anacreontic allegories, in glowing songs of wine and love, represented the mystery of divine love and of the union of the soul with God (see **SUFISM**). In this province we find chiefly eminent poets like Senaji (about beginning of 13th c.), and Ferid Eddin Atta: (b. 1216), renowned author of *Pend Nameh* (Book of Counsel), a work containing the biographies of saints

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until his own day. His principal strength, however, lay in his mystic poems; and such is the depth and hidden meaning of his rhymes, that, for centuries after him, the whole Moslem world has busied itself with commentaries and conjectures on the meaning of a great part of his sacred poetry. He died a martyr, about 1330, more than a hundred years old. Greater still, in this peculiar field, is Djalal Eddin Rumi, born at Balkh (d. 1266), founder of a still existing most popular order of dervishes (Mewlewi). His poem on *Contemplative Life* has made him the oracle of oriental mysticism till this day. He wrote also a great number of lyrical poems, which form, as far as they have been collected for this special purpose, a breviary for the faithful Sufi. Anhadi of Meraga (d. 1297) also deserves mention.

The 13th c. cannot better be closed than with Sheikh Muslih Addin Sâdi of Shiraz (d. 1291), first and unrivalled Persian didactic poet. His *Bostan and Gulistan* (Rose- and Fruit-Garden) are not only of Eastern but also of European celebrity, and embody all the mature wisdom, the grace and happiness of composition, of a true poet, ripe in years as in experience. At the beginning of the 14th c., we meet several meritorious imitators of Sâdi in didactic poetry.

But above all these, as above all other Persian lyrical and erotic poets, shines Hâfiz (q.v.), the 'Sugar-lip,' who sang of wine and love, and nightingales and flowers; and who so offended mock-piety, that it even would have tried to refuse him a proper burial, had not the oracle of the Koran interposed. After him, the glory of Persian poetry begins to wane. Among his successors stands highest Djâmi (d. 1492), poet of varied genius, second only in every one of the manifold branches to its chief master—in panegyric to Enveri, in didactic to Sâdi, in romance to Nizami, in mysticism to Jelal-eddin, in lyric to Sâdi; and he, with these and Firdusi, form the brightest representatives of Persian poetry. He is brilliant, however, as a romantic poet. Of prose works, we have by him a history of Sufis, and a valuable collection of epistolary models. Before concluding this branch of literature, we must notice the dramatic poetry of the Persians, which is not without merit, but of small extent, and to be compared principally with the ancient French mysteries.

The numerous tales, stories, novels, anecdotes, anthologies, and all the miscellaneous entertaining literature in which Persia abounds—and of which the best known, perhaps, are the adaptation of Bidpai's Fables; *Anvari Suheili*, by Husein Vais Kashifi; the *Tutinameh*, or Book of Parrots, a collection of fairy-tales, by Nechshebi; the *Behari-Danish*, by Inajeth Allah, etc.—form fit transition from poetry to prose, for little more is to be said of Persian poetry after the 15th c. Modern imitations of ancient classical works, such as the New Book of Kings, the *Shahinshah Nameh*, which treats of modern Persian history, the

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*George Nameh*, which sings the English conquests in India, etc., are hardly worth pointing out in this brief summary. Of native writers on the poets are Dewlet Shah (who describes the poets from the 10th to the 15th c.), Sam Mirsa (the poets of the 16th c.), and Luft Ali Beg (the poets of modern time). In prose, it is chiefly history which deserves our attention. Able rivals of the great Arabic historiographers sprang up at an early period. For the mythical times, or those of which no knowledge, save through a medium of half-legend, has reached later generations, Firdusi's gigantic epos remains the only source. But after the chroniclers we find Fadhl Allah Reshid Eddin, the vizier of Ghazan, b. 1247 at Hamadan, who was put to death 1320. He wrote the *Collector of Histories*, three vols., to which he afterward added a fourth geographical vol.: a summary of the history of all Mohammedan countries and times, containing besides a complete history of sects. Worthy and contemporaneous rivals are Fachr Eddin Mohammed Bina Kiti, author of a universal history; and Khodja Abdallah Wassaf, the panegyrist, a model of grand and rhetorical style. His most successful imitator in the 14th c. is Abdel Ressak; and in the 15th, Sheref Eddin Ali Yezdi, who wrote the history of Timûr. Until that period, pomposity of diction was considered the principal beauty, if not the chief merit, of a classical Persian history. From the 15th c. onward, a healthful reaction set in, and simplicity and the striving after the real representation of facts became the predominant fashion. The *facile princeps* among these modern historians is Mirkhond, whose *Universal History (Ranset Essafa)* comprises the period from creation to the reign of Sultan Hasan Beikara, in seven books. After him are to be mentioned his son Khondemir, Gaffari, Moslih Eddin Mohammed Lari, and Abu Tahir of Tortosa in Spain, who wrote the *Derab Nameh*, a biographical work on the Persian and Macedonian kings, and the ancient Greek physicians and philosophers.

Among Indian historians—and they form a most important class—who wrote in Persian, were Mohammed Kasim Ferishtah (1640), who wrote the ancient history of India, to the European conquest; Mohammed Hashim. Abul Fadel Mobarrek (*Akbar Nameh*); further, Abdel Ressak (*History of the Padishahs*), Mirza Mehdi, Gholam Hussein Khan, and others. One of the most recent works of this description is the *Measiri Sultaniye*, which contains the history of the present dynasty of Persia (pub. Teheran 1825, transl. by Bridges, Lond. 1833).

Biographies, legends, histories of martyrs, and the like are legion. Most of the biographies of the Prophet, however, are taken from the Arabic.

Little is to be said of Persian productions on special branches of exact science. There are a few works on geography—generally treated together with history—

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such as those of Mestafi, Ahmîn Ahmed Rasi, Berdshendi, etc. In theology, little beyond translations of the Koran, and a few commentaries on single chapters, and of some portions of the Traditions (*Sunnah*), has been produced—the Arabic works being sufficient in religious matters for all Mohammedans. For the history of early Persian religion, important works are the *Ulemai Islam* and the *Dabistan*, a description of all the creeds of the East. Jurisprudence shows little that is original, and not mere translation, partial commentary, or adaptation in Persian: the *Hedadshah*, the *Inadshah*, the *Futawa Alemgiri*, are the most important legal works. Much has been done in medicine, surgery, pharmacy, physical sciences, by Persian writers; but nearly all their chief works being written in Arabic, they do not concern us here. Mathematics, astronomy, and philosophy have received due attention; rhetoric, the art of letter-writing, metrical and poetical arts, likewise have been cultivated with assiduity; but few standard works are to be enumerated. Grammar and lexicography found their principal devotees in India; and of dictionaries, the *Ferhengi-Shiuri*, *Burhani Katiu*, and principally the *Heft Kulzum* (the Seven Seas), by the sultan of Oude, deserve attention. Translations from Greek, Indian, Arabic, Turkish, and other works into Persian, exist in great abundance, and some have paved the way to the knowledge of the original sources in Europe.—Chief authorities and writers on Persian Language and Literature are Meninsky, Richardson, Lumsden, Forbes, Ibrahim De Lacy, Hammer-Purgstall, Briggs, Jones, Duperron, Stewart, Quatremère, Wilken, Defrémery, Vullers, Iken, Kosegarten, Ouseley, Chodzko, Bland, Sprenger, Graff, Brockhaus, Dorn.

**PERSIAN POWDER:** preparation of the flowers of the composite plant, *Pyrethrum carneum* or *roseum*, dried and pulverized; efficacious in destroying noxious insects; and extensively used in Russia, Persia, and Turkey. It has been introduced into western Europe and the United States, both to rid houses of their insect pests, and to aid the horticulturist in protecting his plants. The plant is a native of the Caucasus, where the flowers are gathered wild, and sent to be manufactured chiefly at Tiflis. It might readily be cultivated in western lands, where its value for destroying moths alone would render it a profitable crop. Its habit is very similar to that of camomile.

**PERSICOT**, n. *pér'si-köt* [F. *persicot*—from L. *persicum*, a peach]: a liquor flavored with peach-kernels.

**PERSIFLAGE**, n. *pér'si-flâzh* [F.—from *persifler*, to quiz: connected with *siffler*, to whistle; L. *sibilare*]: light talk treating all subjects with banter. **PERSIFLEUR'**, n. *-flér'*, one who indulges in persiflage; a banterer; a quiz.

## PERSIGNY.

PERSIGNY, *për-sên'yî*, F. *për-sê-nyê'*, JEAN GILBERT VICTOR FIALIN, Duc DE (proper name FIALIN): noted adherent of Emperor Napoleon III.: 1808, Jan. 11—1872, Jan. 11; b. at Saint-Germain-Lespinnasse, dept. of Loire. He entered the *École de Cavalerie* at Saumur 1826, and obtained an appointment to the 4th regiment of hussars 1828. At this period Fialin was royalist in his politics; but he soon changed to a liberal, and was active in the July revolution. Insubordination, however, led to his expulsion from the army 1833. After a brief trial of Saint-Simonianism, Fialin was converted to the Bonapartist cause, dropped the name of Fialin, and took up that of P. (from a 'hereditary estate'), with the title Vicomte. Introduced to Louis Napoleon by the ex-king Joseph, he at once formed intimate relations with the prince, and began a career of Bonapartist propagandism throughout France and Germany, evincing extraordinary energy, pertinacity, and fertility of resource. He had the chief hand in the affair of Strasbourg, and subsequently apologized for its humiliating failure in a pamphlet, *Relation de l'Entreprise du Prince Napoleon Louis* (Lond. 1837), in which he throws the blame of the disaster on 'Fate.' He took part in the descent on Boulogne, where, like his master, he had the misfortune to be captured, and was condemned to 20 years' imprisonment. His confinement, however, after a short time, became almost nominal, and he beguiled his leisure by literary study, a partial result of which is in his voluminous memoir, addressed to the Institute, *Utilité des Pyramides d'Égypte* (1844). On the breaking out of the revolution 1848, P. hurried to Paris, and set himself, with all his accustomed vigor and swiftness, to organize the Bonapartists. It is hardly too much to affirm that this dextrous agitator made his master pres. of the republic. He was then appointed aide-de-camp to the pres., and maj.gen. of the Parisian National Guard—perhaps with a view to future contingencies. In 1849 he was chosen a member of the legislative assembly, and immediately signalized himself in parliament by his absolute devotion to the policy of the Elysée. He was sent to Berlin as ambassador at the close of the same year, and afterward held other high diplomatic offices; was prominent in the *coup d'état* of 1851, Dec.; and 1852, Jan., succeeded De Morny as minister of the interior. On May 27 following, he married a granddaughter of Marshal Ney, when the pres. conferred on him the title *Comte*, and presented him with 500,000 francs. In 1855 he became ambassador at the English court, which office he held till 1858, and again 1859–60, leaving on both occasions a most favorable impression on English statesmen, by his talent and diplomatic tact. In the latter year, he was recalled, to assume the office of minister of the interior. He laid down the portfolio of this office 1863, June, when the elections in Paris and other large towns showed dissatisfaction with his policy; and in Sep. he was created duke. Thereafter he proved himself a zealous Bonapartist.

PERSIMMON—PERSIUS.

PERSIMMON, n. *pěr-sím'ŭn* [Amer. Indian name]: an Amer. tree and its fruit; *Dios'pyros virginĭā'nă*, ord. *Ebenācĕw* (see DATE PLUM).

PERSIST, v. *pěr-sĭst'* [F. *persiste*—from L. *persis'tĕrĕ*, to continue steadfastly—from *per*, through; *sisto*, I fix: It. *persistere*]: to continue steadily in any business or course commenced; not to give over; to persevere. PERSIST'ING, imp. PERSIST'ED, pp. PERSIST'ENCE, n. -ĕns, or PERSIST'ENCY, n. -ĕn-sĭ [L. *persistens*, continuing steadfast]: steady perseverance in what has been undertaken; constancy in purpose or design; perseverance; obstinacy. PERSIST'ENT, a. -ĕnt [L. *persisten'tem*]: constant; continuing; remaining; in *bot.*, not falling off; remaining attached to the axis until the part which bears it is matured. PERSIST'INGLY, ad. -lĭ. PERSIST'IVE, a. -ĭv, in *OE.*, steady; persevering.

PERSIUS, *pěr'shĭ-ŭs* (AULUS PERSIUS FLACCUS): 34-62, Nov. 24; b. Volaterræ, Etruria: one of the four great Roman satirists—Lucilius, Horace, Persius, Juvenal. He was of distinguished equestrian family, was educated under the care of the Stoic, Cornutus, and lived on terms of intimacy with the most distinguished personages of his time in Rome, among whom were Lucan and Seneca. The principal authority for the life of P. is an abridgment of a 'commentary' by one Probus Valerius, which presents the character of the satirist in a most amiable light. Most modest and gentle in his manners, living affectionately with his mother, sister, and aunt, handsome in person, virtuous and pure in his whole conduct and relations, he stands out conspicuously from the mass of corrupt and profligate persons who formed the Roman 'society' of his age; and gained for himself the right to be severe, by leading a blameless and exemplary life. He died in youth, at one of his estates a few miles from Rome. His six Satires are usually printed with those of Juvenal. They were immensely admired in P.'s own day, and long afterward, through the middle ages. The church Fathers, Augustine, Lactantius, and Jerome, particularly were fond of them; but the estimate which modern critics have formed of his writings, is not quite so high. They are remarkable for the sternness with which they censure the corruption of morals then prevalent at Rome, contrasting it with the old Roman austerity and with the Stoic ideal of virtue. The language is terse, homely, and sometimes obscure, from the nature of the allusions and the expressions used, but his dialogues are the most dramatic in the Latin tongue. There is strong tendency to realism, and an unnecessary emphasis and an exaggerated detail, so that he ranks higher as moralist than as writer. The *editio princeps* appeared at Rome 1470; later editions are those of Isaac Casaubon (Par. 1605), Passow (Leip. 1809), Jahn (Leip. 1843), and Heinrich (Leip. 1844). P. has been frequently translated; as many as 14 English, 20 French, and considerably more German versions, being known. The two best English ones are by Dryden and Gifford.

## PERSON.

PERSON, n. *pér'sŏn* [F. *personne*—from L. *persŏna*, a mask, a character, a person: It. *persona*]: a human being; a living soul; an individual of a race or order above the animal (see PERSON, below): one's self; one: the body: character in a play: in *gram.*, one of the three states of a verb as modified by its nominative, representing respectively the speaker, that which is spoken to, and that which is spoken of; the quality of the noun or pronoun which modifies the verb: in *theol.*, specifically a term applied to each of the three distinctions in the Godhead (see PERSON, below: also TRINITY, DOCTRINE OF THE). PER'SONABLE, a. *-ă-bl*, of good appearance; handsome. PER'SONAGE, n. *-ăj* [F. *personnage*]: a man or woman of eminence or distinction: exterior appearance; an individual. PER'SONAL, a. *-ăl* [F. *personnel*, personal—from L. *personālis*]: pertaining to men or women, not to things; peculiar or proper to him or to her: applying directly to one's character or conduct, as, personal remarks: exterior: in *gram.*, denoting the three persons of the verb: movable, not real. PER'SONALLY, ad. *-lī*, in person; not by representative; particularly. PER'SONALITY, n. *-ăl'ī-tī*, that which constitutes distinction of person; individuality (see PERSON, below): reflection upon individuals, as upon their private actions or character. PERSONAL ACTIONS, in *law*, actions brought to try the right to damages for breach of contract, or for injuries to the person or personal estate; in distinction from real actions, designed to try the right and title to real property. PERSONAL ESTATE OR PROPERTY, every species of property except real estate—i.e., lands and houses: see DISTRIBUTIONS, STATUTE OF: CHATTELS: FIXTURES. Title to personal property is acquired through occupancy; through transfer by act of the party, e.g., by sale; through transfer by act of the law, e.g., by judgment; through prescription; and through accession: see PERSONALTY. PERSONAL EXCEPTION, in the *Roman law*, a ground of objection which applies to an individual, and prevents him doing something which, but for his conduct or situation, he might do. The term is adopted in the law of Scotland. In other systems of law, it is called usually estoppel. PERSONAL IDENTITY, in *metaph.*, our sameness of being at every stage of life, of which consciousness gives us the evidence. PERSONAL PRONOUN, in *gram.*, one of the pronouns, I, thou, he, she, it, and their plurals. PERSONAL REPRESENTATIVES, the executors or administrators of a person deceased. PER'SONALIZE, v. *-ăl-īz*, to make personal. PER'SONALIZING, imp. PER'SONALIZED, pp. *-īzd*. PER'SONALTY, n. *-ăl-tī*, in *English law*, all the property which, when a man dies, goes to his executor or administrator, as distinguished from the realty, which goes to his heir-at-law. Personalty consists of money, furniture, stock in the funds; while realty consists of freehold land and rights connected with land: see PERSONAL ESTATE: DISTRIBUTIONS, STATUTE OF: INTESTACY: KIN, NEXT OF. PER'SONATE, a. *-ăt* [L. *persŏnātus*, provided with a mask]: in



## PERSON.

*bot.*, a form of monopetalous corolla where the orifice of the tube is closed by an inflated projection of the throat, the whole resembling a gaping mask: V. to assume the character of another, and in such a way as to pass for that person; to counterfeit; to feign; to play a fictitious character; in *OE.*, to celebrate loudly. **PER'SONATING**, imp.; in *OE.*, celebrating loudly. **PER'SONATED**, pp.: **ADJ.** counterfeit; fictitious. **PER'SONA'TOR**, n. *-tér*, one who assumes a fictitious character. **PER'SONA'TION**, n. *-shün*, the act of assuming the character of another; representation. **PERSONIFY**, v. *pér-sön'í-fī*, to ascribe to a thing the sentiments, actions, or language of a human being. **PERSON'IFYING**, imp. **PERSON'IFIED**, pp. *-fīd*. **PERSON'IFIER**, n. *-fī-ér*, one who personifies. **PERSON'IFICA'TION**, n. *-fī-kā'shün* [*F. personification*]: the act of personifying; in  *rhet.*, a figure (called by the Greeks *Prosopopœia*) by which inanimate objects, or mere abstract conceptions, are invested with the forms and attributes of conscious human life. Oratory and poetry often derive great power and beauty from the employment of this figure. Nowhere do we find more sublime examples than in the Hebrew Scriptures, e.g., 'The sea saw it, and fled.' Such abstract conceptions as Wisdom, Justice, Charity, are often personified in the gravest and most argumentative compositions. **PER'SONNEL'**, n. *-nēl'* [*F.*]: designating in an army or navy the officers and soldiers or sailors, i.e., persons employed in distinction from the *matériel* [*F.*], which comprises the guns, provisions, wagons, and stores of every description: the term is applied similarly to other public services, also in reference to extensively organized private undertakings. **IN PERSON**, by one's self; not by representative. **THE PERSON**, the body. *Note.*—L. *persōna* was primarily the large-mouthed mask worn by an ancient actor, and was so named from the resonance of the voice sounding through it—from L. *persōnārē*, to sound through—from *per*, through; *sōno*, I sound.

**PERSON** [L. *persōna*, a mask] has come, from its original signification, to be applied to the individual wearing the mask, and thus to mean in general an individual, or a numerically distinct being, of a race or order above the animal. Beyond the idea of individuality, it involves that of a sentient, intelligent, and moral subsistence (e.g., a human being), in which it differs from 'substance' or 'thing.' The theological use of the word, though directly based on its philosophical signification, is made difficult of apprehension from its being used—for lack of any adequate term—in the statement of the Christian doctrine of the Trinity, which in itself involves a mystery. Hence, when theologians declare that there are 'Three Persons in one God,' their meaning may take a various shading: some intend to convey strictly that each of the Three Persons is a Being individually subsisting and numerically distinct; and the difficulty of apprehension they refer not to these terms, but to the reconciliation of the numerical distinction of

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Persons with the unity of the Divine Being. From this, which in general has been historically the standard Trinitarian use of the word Person, various modifications have been developed among those who still firmly hold to the scriptural revelation of God under the three-fold distinction grounded in His eternal Being. Many of these, and in recent years probably an increasing number, deem the word Person applicable only approximately to express the transcendent mystery which is necessarily involved, and incline rather to the term Distinction or the ancient *Hypostasis* (subsistence); or seek what they deem a more scriptural statement of the great fact in the simple declaration that God eternally subsists, and reveals himself to man, as the Father and the Son and the Spirit—One God.

The name *Persona*, Person, was applied to the Trinity first by the Latins; the corresponding Greek word, *Prosōpon*, being of later use. The earlier Greek Fathers used the word *Hypostasis*, substance or subsistence, where the Latins used *Persona*, and considerable controversy for a time grew out of this diverse use. It became apparent, however, that the difference was but of words; and after the condemnation of the Sabellian heresy (see SABELLIUS), and still more after the Council of Nicæa, the controversy turned from the words to the substance of the doctrine, in the well-known form of the Arian controversy: see ARIUS: also CHRIST, THE: TRINITY, DOCTRINE OF THE.

## PERSPECTIVE.

**PERSPECTIVE**, n. *për-spěk'tiv* [F. *perspective*, perspective—from L. *perspēctus*, clearly perceived—from *per*, through; *speciō*, I look: Sp. *perspectiva*, perspective]: view or prospect: art of drawing on paper or canvas, etc., pictures of objects or scenery as they appear to the eye from any given point, either real or imaginary (see below): a pocket-telescope: **ADJ.** pertaining to or according to perspective. **PERSPEC'TIVELY**, ad. -*ly*. **PERSPEC'TOGRAPH**, n. -*tō-grāf* [Gr. *graphō*, I write]: an optical instrument for mechanical drawing. **AERIAL PERSPECTIVE**, the faintness of outline and blending of colors produced by the thicker or thinner stratum of air which pervades the optical image viewed, the delineation of which requires, on the part of the artist, a careful study of nature. **LINEAR PERSPECTIVE**, the principles of geometry applied to the accurate delineation of the chief lines of a picture (see **PERSPECTIVE**, below).

**PERSPEC'TIVE**: art of representing natural objects upon a plane surface in such a manner that the representation shall affect the eye in the same way as the objects themselves. The distance and position of objects affect both their distinctness and apparent form, giving rise to a sub-division of P. into *linear perspective*, which, as its name denotes, considers exclusively the effect produced by the position and distance of the observer upon the apparent *form* and *grouping* of objects; while *aerial perspective* confines itself to their *distinctness*, as modified by distance and light. The necessity of attending to the principles of P. in all pictorial drawing is apparent when we consider, e.g., that a circle, seen obliquely, appears to be not a circle, but an ellipse, with its shortest diameter in line with the spectator, and its longest at right angles to this. A square, seen from a position opposite the centre of one of its sides, appears as a trapezoid, the sides which are perpendicular to the direction of vision appearing to be parallel, while the other two appear to converge to a point in front of the spectator, etc. For the same reason, two rows of parallel pillars of equal height, seen from a point between and equidistant from each row, appear not only to converge at the further end, but to become gradually smaller and smaller. An excellent idea of a P. plan can be easily obtained by interposing a vertical transparent plane (as of glass—a window, e.g.) between the observer and the objects of his vision, and supposing that the objects which he sees are seen not *through* the glass, but painted *on* it. A sketch made on a glass plane in this position by following with a pencil all the lines and shades of the objects seen through it, the eye being all the time kept quite steady, would form a picture in perfect perspective. In practice, however, it is found, unfortunately, that glass is not a suitable material for sketching on, and that the vertical position is not the most convenient; it is therefore preferable to make a careful study of the effects produced by change of position and distance on the appearance of objects in

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nature, and from the results of this to compile a body of rules, by the observance of which painters may be enabled to produce an effect true to nature. After the 'scope' (i.e., the number of objects to be introduced, and the distance at which they are to be viewed) of the picture has been determined, and before the design is commenced, it is necessary to draw upon the P. plan three lines: 1. The *base-line*, or *ground-line*, which limits the sketch toward the operator, and is the base-line of the picture. 2. The *horizontal line*, which represents the ordinary position of the sensible horizon. The height of the horizontal line is about one-third of the height of the picture, when the sketcher is placed at or little above the level of the horizon; but it may rise in a degree corresponding to his increase of elevation, till it reaches near to the top of the P. plan. The general rule is to have a high horizontal line when the view is taken, or supposed to be taken, from an eminence; but when the station is on a level, either actual or assumed, as is the case when a statue or a mountainous landscape is figured, the horizontal line must be low. The horizontal line in nearly all cases is supposed to be level with the spectator's eye. 3. The *vertical line*, which is drawn from the supposed position of the sketcher, perpendicular to the *ground* and *horizontal* lines, meeting the latter in a point which is called the *point of sight*, or centre of the picture. The vertical line has no representative in nature, and is merely a mechanical adjunct to the construction of the picture, all vertical lines in nature being parallel to it in the picture. The point of sight, being the point directly opposite to the observer, is properly placed in the centre of the picture, for it is most natural that the view should lie symmetrically on each side of the principal visual line; but this is not at all a universal rule, for we very frequently find it on the right or left side, but always, of course, on the horizontal line. All lines which in nature are perpendicular to the ground-line, or to a vertical plane raised upon it as a base, meet in the point of sight, which is thus their *vanishing point* (see the line of the tops and bottoms of the pillars in fig. 1).

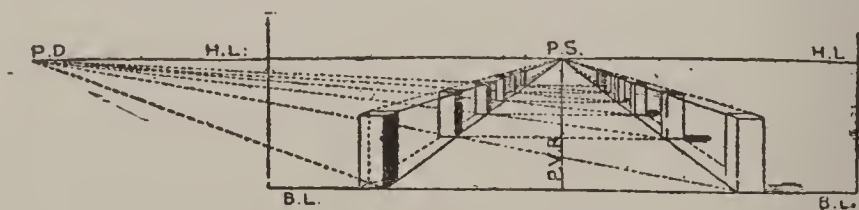


Fig. 1.

Illustrating the more important points and lines; P.V.R. is the principal visual ray.

The *points of distance* are two points in the horizontal line on each side of the point of sight, and in a 'direct' sketch are at a distance from it equal to the horizontal distance of the sketcher's eye from the ground-line. The equality of distance of these points from the point of sight is not, however, necessary, as it occurs only in

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those cases where the lines, of which the points of distance are the *vanishing points*, are inclined (in nature) at an angle of  $45^\circ$  to the base-line; but, in all cases, the two points of distance are about twice as far apart as the eye is from the picture. One important use of the points of distance is to define the distance of objects in a row (fig. 1) from each other. For this purpose, two points of distance are not necessary, as, when the position of one pillar is found, that of the one opposite is at once obtained by drawing a line parallel to the base or ground-line. We have seen that the point of sight is the vanishing point of all level lines which meet the ground line or a vertical plane on it at right angles, and that the points of distance (in a *direct* picture) are the vanishing points of all lines which cut the ground-line at an angle of  $45^\circ$ ; but there are many other groups of parallel lines in a picture which have different situations, and therefore different vanishing points. Such lines with their vanishing points (called, for distinction's sake, *accidental points*) are represented in fig. 2. If the accidental point is above the horizontal line, it is called the *accidental point aerial*—if below, the *accidental point terrestrial*; and a little consideration makes it evident that these points may or may not be situated within the plane of the picture. Such are the points and lines necessary for the construction of a plan in true P.; and from the above explanation, we may deduce the two general principles: 1, That all parallel straight lines in nature are no longer parallel when projected on the P. plane, but meet in a point which is called the vanishing point, and is some one of the three above described, unless these lines happen to be also parallel to the ground-line or the vertical line, in which case they re-

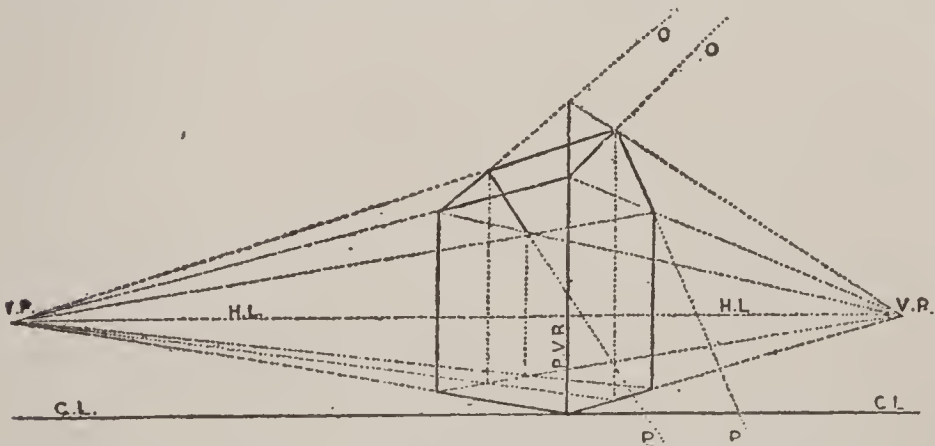


Fig. 2.

The lines O O converge to the accidental point aerial, and P P to the accidental point terrestrial.

main parallel when transferred to the picture; and 2, That since the bodies drawn below the horizontal line are seen as if from above, those above as if from below, and those to the right and left of the point of sight as if observed from the left and right, it follows, that straight lines which in the picture are above the horizontal line lower themselves, while those below raise

## PERSPICACIOUS.

themselves to it; those to the left, following the same law, direct themselves to the right, and *vice versa*.

*Aerial perspective* consists in a modulation of the brightness and colors of objects in accordance with the state of the atmosphere, the depth of the body in the P. plane (i.e., distance in nature from the ground-line), and other accidents of place and time. As the distance of objects increases, their illuminated parts are made less brilliant, and their shaded parts more feeble. The bluish tint imparted by a large mass of the atmosphere to the bodies seen through it is frequently imitated by the mixing of a slight tint of blue with the colors to be applied; a yellow object thus assumes a greenish tint; a red one, a violet tint, etc. The air, when charged with vapor, is represented by a diminution of the brightness of colors, and by the grayish tint imparted to them. But in this part of the subject, rules are of little avail, for experience alone can guide the painter in faithfully copying the myriad aspects presented by nature.

A thorough knowledge of P. is a *sine qua non* to the painter or designer, and though many are inclined to think it a superfluity, and that the sketcher has only to make use of his eyes, and copy justly, the very fact that such is their opinion shows that they have never made the attempt; for it is impossible for the painter, and much more so for the designer, to execute a copy of nature with sufficient accuracy by the sole aid of the eye and hand, a fact unfortunately too frequently proved by many of the sketches exhibited in fine-art collections. P. was known to the ancients, but seems to have become a lost art during the disturbances that convulsed Italy; and was revived by Albert Dürer, Pietro del Borgo, and Bramantino of Milan (1440), whose body of rules was extended and completed by Peruzzi and Ubaldi about 1600. Dr. Brook Taylor was the first Englishman who discussed the subject scientifically. Works on P. are now abundant in every language.—See PROJECTION.

PERSPICACIOUS, a. *pér'spī-kā'shūs* [F. *perspicace*, perspicacious; L. *per'spicax* or *perspicā'cem*, penetrating, acute; *perspicō*, I look thoroughly or closely at—from *per*, through, and *specō*, I look: It. *perspicace*]: sharp of sight; of acute discernment or understanding. PER'SPICA'CIOSLY, ad. *-lī*. PER'SPICA'CIOSNESS, n. *-shūs-nēs*, or PER'SPICA'CIETY, n. *-kās'ī-tī* [F. *perspicacité*—from L. *perspicacitātem*]: quickness of sight or acuteness of discernment. PERSPICUOUS, a. *pér-spīk'ū-ūs* [L. *perspicuus*, clear]: easily understood; clear to the mind; plain; evident; obvious. PERSPIC'UOUSLY, ad. *-lī*. PERSPIC'UOUSNESS, n. *-nēs*, or PERSPICUITY, n. *pér'spī-kū'ī-tī*, easiness to be understood; plainness; distinctness; that quality in language which presents with great plainness to the mind of another the precise ideas of a writer or speaker; lucidity.—SYN. of 'perspicuity': clearness; perspicuousness; transparency; translucency.

## PERSPIRE—PERTAIN.

**PERSPIRE**, v. *për-spīr'* [L. *perspirārē*, to breathe through or everywhere—from *per*, through; *spīro*, I breathe]: to sweat; to emit or exhale through the pores of the skin. **PERSPIRING**, imp. **PERSPIRED'**, pp. *-spīrd*. **PERSPIRABLE**, a. *-rā-bl*, that may be perspired. **PERSPIRATION**, n. *për'spī-rā'shūn* [F.—L.]: sweat; evacuation of moisture through the pores of the skin; matter perspired (see SWEAT). **PERSPIRABILITY**, n. *për-spīr'ā-bil'ī-tī*, the quality of being perspirable. **PERSPIRATIVE**, a. *-ā-tīv*, or **PERSPIRATORY**, a. *-ā-tēr-ī*, performing the act of perspiration.

**PER STIRPES**, *për stēr'pēz* [L. by descents]: term in law, denoting division of an inheritance among descendants according to their degrees of nearness of descent from or kinship to a testator or a person dying intestate: see **PER CAPITA**.

**PERSUADE**, v. *për-swād'* [F. *persuader*—from L. *persuādērē*, to persuade—from *per*, thoroughly; *suādēo*, I advise: It. *persuadere*]: to influence by advice or argument; to draw or incline a person by presenting powerful motives to the mind; to convince by argument or entreaty. **PERSUADING**, imp. **PERSUADED**, pp. convinced; induced. **PERSUADER**, n. *-dēr*, one who persuades. **PERSUADABLE**, a. *-dā-bl*, capable of being persuaded. **PERSUA'SIVE**, a. *-swā'siv* [L. *persuāsus*, persuaded: F. *persuasif*, persuasive]: having power to persuade; influencing the mind or passions: N. that which persuades; an incitement. **PERSUA'SIVELY**, ad. *-siv-lī*. **PERSUA'SIVENESS**, n. *-nēs*, the quality of being persuasive. **PERSUA'SORY**, a. *-sēr-ī*, having the power or tendency to persuade. **PERSUA'SION**, n. *-shūn* [F.—L.]: the act of persuading; state of being persuaded; settled opinion or conviction; a religious sect or party adhering to a certain creed or system. **PERSUA'SIBLE**, a. *-sī-bl*, that may be influenced by reasons offered. **PERSUA'SIBLENESS**, n. *-bl-nēs*, the quality of being persuasible. **PERSUA'SIBILITY**, n. *-bil'ī-tī*, capability of being persuaded.—**SYN.** of 'persuade': to induce; convince; convict; exhort; entice; allure; prevail on; win over; advise.

**PERSULPHATE**, n. *për-sūlfāt* [L. *per*, thoroughly, and Eng. *sulphate*]: a sulphate of the peroxide of any base. **PERSULPHURET**, n. *-fū-rēt* [L. *per*, and *sulphuret*]: the sulphide which has the largest proportion of sulphur.

**PERT**, a. *pèrt* [W. *pert*, smart, fine; *perten*, a smart little girl; *percu*, to trim, to smarten (see **PERK**)]: having the quality of liveliness carried to excess; forward; indecorously free; saucy. **PERT'LY**, ad. *-lī*. **PERT'NESS**, n. *-nēs*, forwardness; sauciness. *Note.*—In OE. *pert* is sometimes employed in the sense of 'evident; open,' being here a corruption of F. *apert*, L. *apertus*, open.

**PERTAIN**, v. *për-tān'* [OF. *partenir*, to pertain—from L. *pertinērē*, to reach or extend to—from *per*, through; *tenēō*, I hold: It. *pertenere*]: to be the property, right, or duty of; to concern; to have relation to. **PERTAINING**, imp. **PERTAINED'**, pp. *-tānd'*.

## PERTEREBRATION—PERTH.

**PERTEREBRATION**, n. *pér'tēr-ě-brā'shūn* [L. *perterēbrātus*, bored through—from *per*, through; *terēbrō*, I bore; *terebra*, a borer—from *tero*, I grind]: the act of boring through.

**PERTH**, *pérth*: city, royal, municipal, and parliamentary burgh, cap. of the Scotch county of P. or Perthshire (q.v.); on the right bank of the Tay, 45 m. n.n.w. of Edinburgh by railway (through Fife). The charming scenery of the immediate vicinity, the Tay, a broad and noble river, sweeping southward along the e. side of the city, and the superb background of the Grampians on the north, give interest and beauty to the site of the 'Fair City;' while its rank as in some sort the ancient metropolis of Scotland, its important part in the history of the country, and the picturesque associations with which history and fiction have invested it, give it good rank among Scotch cities. A handsome bridge of nine arches, 880 ft. in length, and stretching over a water-way 590 ft. in width, connects the town with the suburb of Bridgend, on the left bank of the river. Further down, the Perth and Dundee railway crosses the river on a fine stone and iron bridge, which admits foot-passengers also. The appearance and salubrity of P. are much enhanced by two beautiful public parks, called the North and South Inches. The water supply, obtained from the Tay, is filtered, raised by steam into two elevated reservoirs, and thence distributed over the town, rising to the upper stories of the highest houses. Among the interesting public buildings are the Church of St. John, an ancient structure in the Pointed Style, surmounted by a massive square tower; the County Buildings, a Grecian edifice; the Town-house (part of which is as old as 1210); King James VI.'s Hospital; the Infirmary; and the local prison. At the head of the South Inch stands the Penitentiary, or General Prison, one of the largest buildings of the kind in Scotland, where all criminals sentenced to imprisonment for long periods are confined. The town contains a statue of the late Prince Consort; Marshall's Monument, erected in honor of a former lord provost, and containing a public library and the Museum of the Antiquarian Soc.; the public seminaries, Sharp's and other educational institutions. The river is navigable to P. for vessels of considerable burden. The linen and wincey manufactures are thriving. There are dye-works, iron-foundries, breweries, etc.; but ship-building has declined. The salmon-fishery on the Tay is very valuable, the rental being more than £15,000. In 1880, 204 vessels, of 16,573 tons, entered and cleared the port. Six fairs are held annually, and horse-races take place every year on the North Inch. P. has a charter as a royal burgh from King William the Lion (1165-1214). It returns a member to the house of commons. Pop (1881) of royal and parliamentary burgh 28,948; (1901) 32,872. There are more than 20 places of worship. The city revenue 1879-80 was £7,380.



## PERTH—PERTH AMBOY.

**PERTH:** city, cap. of W. Australia and of P. co.; on the Swan river, 12 m. from its mouth, about 1,700 m. from Melbourne. A military force is constantly stationed here, and a large number of convicts are confined in the prisons. The Rom. Cath. and Anglican churches each has a bishop at P. There are some very fine buildings, including a mechanics' institute, the palace of the governor, and a city hall erected by convict labor. The Victoria Mts. are near, and the scenery is remarkably picturesque. The city was incorporated 1856. Pop. (1901) 36,274.

**PERTH, FIVE ARTICLES OF:** memorable in the ecclesiastical history of Scotland; articles agreed on in a meeting of the gen. assembly of the Church of Scotland, convened at Perth, by command of James VI., 1618, Aug. 25. These Articles enjoined kneeling at the Lord's Supper, observance of Christmas, Good Friday, Easter, and Pentecost, and of the rite of confirmation, and sanctioned private administration of baptism and of the Lord's Supper. They were highly obnoxious to the Presbyterians of Scotland, not only on their own account, but as part of an attempt to change the whole constitution of the church, and because they were adopted without free discussion in the assembly, and in mere compliance with the will of the king, who was also regarded as having unduly interfered with the constitution of the assembly itself. They were, however, ratified by the parliament 1621, Aug. 4—a day long remembered in Scotland as *Black Saturday*; and being enforced by the court of high commission, became one of the chief subjects of that contention between the king and the people which produced results so sad for both, in the subsequent reign. The gen. assembly at Glasgow, 1638, declared that of Perth to have been 'unfree, unlawful, and null,' and condemned the Five Articles.

**PERTH AMBOY,** *pérth âm-boy'*: city and port of entry in Middlesex co., N. J.; on the Central railroad of New Jersey, the Lehigh Valley and the Pennsylvania railroads, and on the Raritan Bay, 21 m. from New York. It is well supplied with churches and schools; has a girls' seminary, one daily and two weekly newspapers, a state bank (cap. \$35,000), and a savings bank. It has an excellent harbor and considerable foreign commerce. The manufactures include cork, white ware, fire-brick, building brick, and iron castings, and there are extensive terra-cotta works. The first houses were built 1683, and a court-house was built 1695. There are records of a town govt. 1718, and articles of incorporation were obtained 1784. Pop. (1870) 2,861; (1880) 4,808; (1890) 9,512; (1900) 17,699.

## PERTHES.

PERTHES, *për'tëss*, FRIEDRICH CHRISTOPH: eminent German publisher: 1772, Apr. 21—1843, May 18; b. Rudolstadt. In his 15th year, he was apprenticed to a Leipzig bookseller, with whom he remained six years, giving much of his leisure to study. In 1793 he passed into the establishment of Hoffmann, the Hamburg bookseller; and 1796 started business on his own account; and, by his appreciation of the public wants, his diligence, and his integrity, he ultimately made it one of the most extensive publishing concerns in modern Germany. During the first few years of his Hamburg apprenticeship, his intimate friends had been either Kantian or skeptical in their opinions; and P., who had no great learning or speculative talent, had learned to think with his friends; but a friendship which he subsequently formed with Jacobi (q.v.), and the Holstein poet and humorist, Matthias Claudius, led him into a serious though liberal Christianity. The iron rule of the French in n. Germany, and the prohibition of intercourse with England, nearly ruined trade; yet P., even in this great crisis, found ways to extend his dealings. He endeavored to enlist the intellect of Germany on the side of patriotism, and 1810 started the *National Museum*, with contributions from Jean Paul Richter, Count Stolberg, Claudius, Fouqué, Heeren, Sartorius, Schlegel, Görres, Arndt, and other eminent men. Its success was far beyond P.'s expectations, and encouraged him to continue his patriotic activity, till Hamburg was formally incorporated with the French empire. He subsequently was prominent in forcing the French garrison to evacuate Hamburg, 1813, Mar. 12; and on its reoccupation by the French, he was one of the *ten* Hamburgers specially excepted from pardon. After peace had been restored to Europe, P. steadily applied himself to the extension of his business, and to the consolidation of the sentiment of German national unity, as far as that could be accomplished by literature and speech. In 1822, transferring his Hamburg business to his partner Besser, he removed to Gotha, where he published mainly great historical and theological works. His subsequent correspondence with literary, political, and theological notabilities—e.g., Niebuhr (one of his dearest friends), Neander, Schleiermacher, Lücke, Nitzsch, Tholuck, Schelling, and Umbreit—is extremely interesting, and throws a rich light on the recent inner life of Germany.—See *Friedrich Perthes' Leben* (12th ed. 1853), by his second son, Clemens Theodor P., prof. of law at Bonn—d. 1867.—The uncle of Friedrich Christoph P. was JOHANN GEORG JUSTUS P. (d. 1816), who established a publishing and bookselling house at Gotha 1785, which has acquired, in the hands of his sons, a great reputation, and from which issues the famous *Almanach de Gotha*.

## PERTSHIRE.

PERTSHIRE, *pérth'shèr*: important inland county in Scotland; bounded s. by the shires of Stirling and Clackmannan; n. by Inverness and Aberdeen; w. by Argyle and Dumbarton; e. by Forfar, Fife, and Kinross. It extends from e. to w. about 70 m., and n. to s. about 66 m.; 2,834 sq. m., or 1,814,063 acres, of which more than 32,000 are covered with water. It is divided into the Highland and Lowland districts, the former occupying much the larger surface; and these are sub-divided into 10 divisions—viz., Menteith, Strathearn, Gowrie, Stornont, Strathardle, Glenshee, Athole, Breadalbane, Rannoch, and Balquidder. P. has a comparatively mild climate; and the soil, in Strathearn, Carse of Gowrie, and less extensive tracts, being mostly a rich loam, crops of many kinds are brought to utmost perfection. These districts are also famed for fruit and floral production. P. is not less distinguished for its magnificent mountain, lake, and river scenery. The Grampians here attain nearly their maximum height, Ben Lawers within a few ft. of 4,000, Ben More 3,843, and several others above 3,000. The lakes are numerous, the principal of which are Lochs Tay, Ericht, Rannoch, Tummel, Lydock, Garry, Lyon, and Dochart. There are several streams of note, the principal being the Tay, which is fed by numerous other streams, and is said to discharge as much water into the sea as any other river in the kingdom. These lakes and streams afford excellent fishing, and the Tay is valuable for its salmon, yielding in rent about £15,000 a year.

The monuments of antiquity in this county afford an interesting field of investigation. Lying n. of the Roman wall, P. comprises the scenes of the last struggle for independence, which the inhabitants of the Lowland districts of Scotland made against those formidable enemies who were regarded as invincible. The last battle fought by the Caledonians against the Romans was at Mons Gramp, or rather, as it should be read, Graup, supposed to be indicated by the great camp at Ardoch, between Dunblane and Crieff, and which does not at all seem connected with the Grampian range. In this final struggle, the result of which was that the Lowlanders were defeated, Agricola commanded the conquering host, and the Caledonians were led by a chief named *Galgacus*.

The chief towns of P. are Perth, Coupar-Angus, Auchterarder, Crieff, Dunblane, and Blairgowrie. According to agricultural statistics (1881), the number of acres under all kinds of crops, bare fallow, and grass, was 345,788; under corn crops, 105,013; under green crops, 53,303; clover, sainfoin, and grasses under rotation, 100,451; permanent pasture and meadow land (exclusive of heath or mountain land), 84,823. Horses used for agriculture, etc., 14,328; cattle, 76,634; sheep, 675,081; pigs, 7,741. The valued rent of P. for 1674 was equal to £28-330; for 1879-80, £890,995—exclusive of £110,047 for railways and water-works. The rate of mortality is low. The county returns two members to parliament.

## PERTINACIOUS—PERTINENT.

The Old Red Sandstone, granite, and slate abound. In this county are some of the stateliest mansions of Scotland, but, except Scone Palace, none contain any historical memorials; and objects of antiquarian interest more recent than Roman roads and camps are the Cathedrals of Dunblane and Dunkeld, and the Abbey of Culross. There are two royal burghs, Perth and Culross, besides which are several villages of considerable size, with some trade in flax, etc. Pop. (1891) 126,128; (1901) 123,283.

**PERTINACIOUS**, a. *pér'ti-nā'shūs* [L. *pertinax* or *pertinācem*, that holds very fast—from *per*, thoroughly; *tenax*, tenacious—from *tenēō*, I hold: It. *pertinace*]: unyielding; firm; resolute; adhering with fixed resolution or obstinacy, as to an opinion. **PER'TINA'CIOSLY**, ad. -*lī*. **PER'TINA'CIOSNESS**, n. -*shūs-nēs*, or **PER'TINAC'ITY**, n. -*nās'ī-tī*, firm or unyielding adherence to opinion or purpose; steady resolution or perseverance; obstinacy.—**SYN.** of 'pertinacious': obstinate; determined; stubborn; inflexible; resolute; constant; steady.

**PERTINAX**, *pér'ti-nāks*, **HELVIUS**: Roman emperor: A.D. 126, Aug. 1—193, Mar. (reigned 192, Dec. 31—193, Mar.); b., according to Dio Cassius, at Alba Pompeia, a Roman colony of Liguria. He rose through various grades in military service, to the command of the first legion; in 179 was chosen consul, and was gov. successively of several provinces. Being sent to command the turbulent legions in Britain, he, against his will, was proclaimed by them emperor; on which he solicited to be recalled, and was appointed proconsul of Africa, prefect of Rome, and consul (a second time) 192. The assassins of Emperor Commodus almost forced P. to accept the purple, which with great hesitation he did but he was unable to gain over the pretorian guard. His accession was, however, hailed with delight by the senate and people, who were rejoiced to have, as ruler, an able captain, instead of a ferocious debauchee; and P., encouraged by this favorable reception, planned various reforms; but was attacked by a band of the rebellious pretorians, two months and twenty-seven days after his accession; and disdaining to flee, was slain, and his head carried about the streets of Rome in triumph.

**PERTINENT**, a. *pér'ti-něnt* [F. *pertinent*—from L. *pertinens* or *pertinen'tem*, reaching or extending to—from *per*, through; *tenēō*, I hold: It. *pertinente*]: just to the purpose; to the point; relating to the subject or matter in hand; relevant; equivalent to the French term, *à propos*. **PER'TINENTLY**, ad. -*lī*. **PER'TINENCE**, n. -*něns* [F.—L.], or **PER'TINENCY**, n. -*něn-sī*, justness of relation to the subject or matter in hand; suitability.—**SYN.** of 'pertinent': fit; proper; suitable; appropriate; apposite.

## PERTURB—PERTURBATIONS.

**PERTURB**, v. *pér-térb'* [F. *perturber*, to perturb—from L. *perturbārē*, to throw into utter confusion, to embarrass—from *per*, thoroughly; *turbārē*, to disturb: It. *perturbare*]: to trouble or disquiet; to put out of regularity; to cause to deviate from an elliptic orbit. **PERTURB'ING**, imp. **PERTURBED'**, pp. *-térbd'*: **ADJ.** agitated; disquieted. **PERTURBATION**, n. *pér-tér-bā'shŭn* [F.—L.]: disquiet of mind; restlessness and disorder of the mind; commotion of the passions; confusion; cause of disquiet.

**PERTURBA'TIONS OF THE PLANETS**, in Physical Astronomy: deviations of the planets from their regular elliptic courses; produced in the motion of one heavenly body about another, by the action of a third body, or by the non-sphericity of the principal body. Thus, e.g., were there no bodies in space except the earth and moon, the moon would describe accurately an ellipse about the earth's centre as focus, and its radius vector would pass over equal areas in equal times—but only if both bodies were homogeneous and truly spherical, or had their constituent matter otherwise so arranged as to attract each other as if each were collected at some definite point of its mass. The oblateness of the earth's figure, therefore, produces P. in what would otherwise be the fixed elliptic orbit of the moon. Again, when we consider the sun's action, it is obvious that in no position of the moon can the sun act equally on both earth and moon; for at new moon, the moon is nearer to the sun than the earth is, and is therefore more attracted (in proportion to its mass) than the earth—that is, the *difference* of the sun's actions on the earth and moon is equivalent to a force tending to draw the moon away from the earth. At full moon, on the other hand, the earth (in proportion to its mass) is more attracted than the moon is by the sun; and the perturbing influence of the sun is again of the nature of a force tending to separate the earth and moon. About the quarters, on the other hand, the sun's attraction (mass for mass) is nearly the same in amount on the earth and moon, but the *direction* of its action is not the same on the two bodies, and it is easy to see that in this case the perturbing force tends to bring the earth and moon nearer to each other. For any given position of the moon, with reference to the earth and sun, the *difference* of the accelerating effects of the sun on the earth and moon is a disturbing force; and it is to this that the P. of the moon's orbit, which are the most important, and among the most considerable, in the solar system, are due. [By the word *difference* is understood, not the arithmetical difference, but the resultant of the sun's direct acceleration of the moon, combined with that of the earth reversed in direction and magnitude; as it is only with the *relative* motions of the earth and moon that the calculation is concerned.] This disturbing force may be resolved into three components—e.g., we may have one in the line joining the earth and moon, another parallel to the plane of the ecliptic, and perpendicular to the moon's

## PERTURBATIONS.

radius vector, and a third perpendicular to the plane of the ecliptic. The first component, as noted above, tends to separate the earth and moon at new and full, and to bring them closer at the quarters; but during a whole revolution of the moon, the latter tendency is more than neutralized by the former—that is, in consequence of the sun's disturbing force, the moon is virtually less attracted by the earth than it would have been had the sun been absent. The second component tends mainly to accelerate the moon's motion in parts of its orbit, and to retard it at others. The third component tends, on the whole, to draw the moon toward the plane of the ecliptic. We cannot, of course, enter here into even a complete sketch of the analysis of such a question as this; but one or two very simple considerations may be given, which will indicate the nature of the grand problem of perturbations.

The method, originally suggested by Newton, and found, on the whole, most satisfactory in these investigations, is called the *Variation of Parameters*, and admits of very simple explanation. The path which a disturbed body pursues is, of course, no longer an ellipse, nor is it in general either a plane curve or re-entrant. But *it may be considered to be an ellipse which is undergoing slow modifications in form, position, and dimensions, by the agency of the disturbing forces.* In fact, it is obvious that any small arc of the actual orbit is a portion of the elliptic orbit which the body would pursue forever afterward if the disturbing forces were suddenly to cease as it moved in that arc. The *parameters*, then, are the elements of the orbit—that is, its major axis, eccentricity, longitude of apse, longitude of node, inclination to the ecliptic, and epoch; the latter quantity indicating the time at which the body passed through a particular point, as the apse, of its orbit. If these be given, the orbit is completely known, with the body's position in it at any given instant. If there be no disturbing forces, all these quantities are constant; therefore, when the disturbing forces are taken into account, they change very slowly, as the disturbing forces are, in most cases, very small. To give an instance of the nature of their changes, let us briefly consider one or two simple cases. First, to find the nature of some of the effects of a disturbing force acting in the radius vector, and tending to draw the disturbed, from the central, body. Let S be the focus, P the nearer apse, of the undisturbed elliptic orbit. When the moving body passes the point M, the tendency of the disturbing force is to make it describe the dotted curve in the figure—i.e., the new direction of motion will make with the line MS an angle more nearly equal to a right angle than before; and therefore the apse Q in the disturbed orbit will be sooner arrived at than P would have been in the undisturbed orbit—that is, the apse *regre-des*, or revolves in the contrary sense to that of M's motion. Similarly, the effect at  $M_1$  is to make the apse regrede to  $Q_1$ . At  $M_2$  and  $M_3$ , on

## PERTURBATIONS.

the other hand, the tendency is to make the apse prograde. Also, as the velocity is scarcely altered by such a force, the major axis remains unaltered. Thus at  $M$  the eccentricity is diminished, and at  $M_1$  increased, since the apsidal distance is increased at  $M$ , and diminished at  $M_1$ .

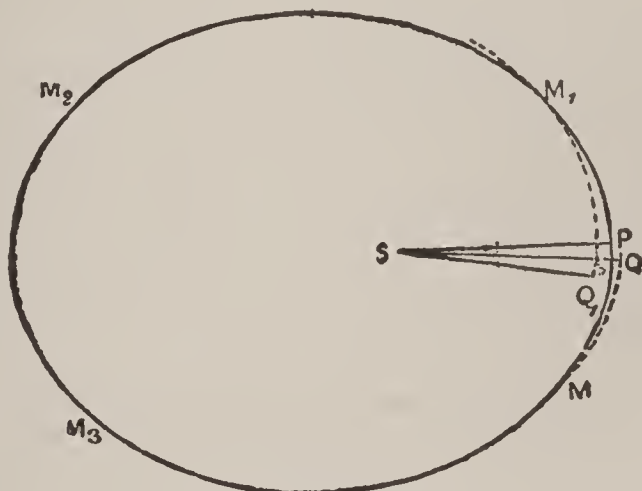


Fig. 1.

Next, consider a tangential accelerating force. Here the immediate effect is to increase the velocity at any point of the orbit, therefore to make it correspond to a larger orbit, consequently to a longer periodic time. Conversely, a retarding force, such as the resistance of a medium, diminishes the velocity at each point, and thus makes the motion correspond to that in an ellipse with a less major axis, and therefore with a diminished periodic time. This singular result, that the periodic time of a body is *diminished* by resistance, is realized in the case of Encke's comet; and this observed effect furnishes one of the most convincing proofs of the existence of a resisting medium in interplanetary space.

Again, the effect of a disturbing force continually directed toward the plane of the ecliptic is to make the node regrede. Thus, if  $N'N$  represent the ecliptic,  $NM$

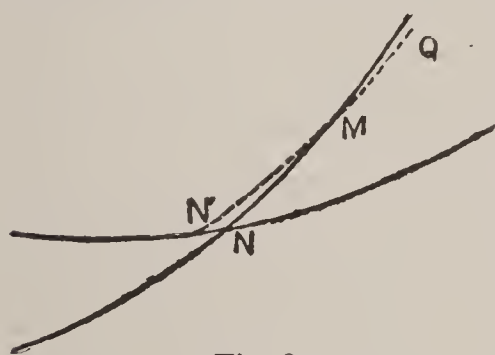


Fig. 2.

a portion of the orbit, the tendency of the disturbing force at  $M$  is to make  $MQ$  the new orbit, and therefore  $N'$  the node. Thus the node regredes, and the inclination of the orbit to the ecliptic is diminished, when the planet has just passed the ascending node. In Figure 3, let

$M_1$  be a position of the planet near the descending node  $N_1$ . The effect of the disturbing force is to alter the orbit to  $MN_1'$ . Thus, again, the node regredes, but the inclination is increased. If  $NN'$  and  $N_1N_1'$ , in these figures, represent the earth's equator, the above rough sketch applies exactly to the case of the moon as disturbed by the oblateness of the earth. The reaction of

## PERTURBATIONS.

the moon on the earth gives rise to the Precession (q.v.) of the Equinoxes.

By processes of this nature, Newton subjected the variation of the elements of the moon's orbit to calculation, and obtained the complete explanation of some of the most important of the lunar inequalities: see MOON. Others of them—e.g., the rate of progression of the apse—cannot be deducted with any accuracy by these rough investigations, but tax, in some cases, the utmost resources of analysis. Newton's calculation of the rate of the moon's apse was only about half the observed value; and Clairaut was on the point of publishing a pamphlet, in which a new form was suggested for the law of gravitation, in order to account for the deficiency

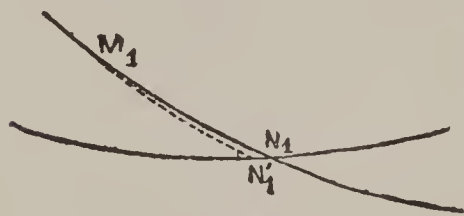


Fig. 3.

of this estimate, when he found, by carrying his analysis further, that the expression sought is obtainable in the form of a slowly converging series, of which the second term is nearly as large as the first. The

error of the modern Lunar Tables, founded almost entirely on analysis, with the necessary introduction of a few data from observation, rarely amounts to a *second* of arc; and the moon's place is predicted four years beforehand, in the *Nautical Almanac*, with a degree of precision which no mere observer could attain, even from one day to the next. This is the true proof, not only of the law of gravitation, but also of the Laws of Motion (q.v.), on which, of course, the analytical investigation is based.

The mutual perturbations of the planets are divisible into two classes, *periodic* and *secular*. The periodic depend on the configurations of the system—such, e.g., is the diminution of the inclination of the moon's orbit, after passing the ascending node on the earth's equator, above mentioned; or its increase as the moon comes to the descending node. The secular perturbations depend on the period in which a complete series of such alternations has been gone through, and have, in the case of the planets, complete cycles measured by hundreds of years.

A very curious kind of perturbation is seen in the *indirect* action of the planets on the moon. There is a secular change of the eccentricity of the earth's orbit, due to planetary action, and this brings the sun, on the average, nearer to the earth and moon for a long period of years; then for an equal period takes it further off. One of the effects of the sun's disturbing force being, as we have seen, to diminish, on the whole, the moon's gravity toward the earth, this diminution will vary in the same period as the eccentricity of the earth's orbit; therefore the moon's mean motion will be alternately accelerated and retarded, each process occupying an immense period.



## PERTUSE—PERTUSSIS.

With special reference to the planetary motions, it is noteworthy that the major axis of each planetary orbit is free from all secular variations; and those affecting the inclination and eccentricity are confined within small limits, and ultimately compensate themselves. These facts, clearly and beautifully demonstrated by Laplace and Lagrange, assure the stability of the planetary orbits, if we neglect the effects of resistance due to the interplanetary matter; which, however, must, in the long run, bring all the bodies of the system into collision with the sun, and ultimately stop the rotation of the sun itself.

Newton began the investigation of perturbations by considering those of the moon; Euler followed with a calculation of Saturn's inequalities; Clairaut, D'Alembert, and others successively gave those of the other planets.

It is well known that it was by observing the perturbations of Uranus, and thence discovering the direction of the disturbing force, that Adams and Leverrier were led to their great and simultaneous discovery of the planet Neptune.

PERTUSE, a. *pěr-tūs'*, or PERTUSED', a. *-tūsd'* [L. *pertūsus*, perforated—from *per.* through; *tūsus*, beaten, hammered—from *tundo*, I beat: F. *perçuis*, a hole]: punched; perforated or pierced irregularly; in *bot.*, having slits or holes. PERTUSION, n. *pěr-tū chūn*, the act of piercing; the hole made; a perforation. PERTUSATE, a. *pěr-tūs'āt*, in *bot.*, pierced at the apex.

PERTUSSIS, n. *pěr-tūs'sis* [L. *per*, thoroughly; *tussis*, a cough]: whooping-cough.

## PERU.

PERU, *pē-rô'*, Sp. *pā-rô'*: important maritime republic of S. America; bounded n. by Ecuador, w. by the Pacific, s. and s.e. by Chili and Bolivia, e. by Brazil; lat.  $3^{\circ} 25' - 19^{\circ} 30' \text{ s.}$ , long.  $67^{\circ} - 81^{\circ} 20' \text{ w.}$  The general outline resembles a triangle, the base of which is formed by the boundary-line between P. and Ecuador, on the north. On the e. side of the Andes, between the Amazon and the Purus, there is a wide, unexplored region on which both P. and Brazil have claims, though the boundary is now generally regarded as marked by the Rio Javary. The area of P. has been much affected by the disastrous war with Chili 1879-81. Before the war, the area of P. was stated at 503,000 English sq. m., while the pop. by census of 1876 was 2,699,945, besides 350,000 uncivilized Indians. By the treaty of 1883, P. finally lost to Chili her s. province of Tarapaca, 16,000 sq. m., pop. 42,000; leaving actual pop. (1883) 2,657,945, excluding Indians. P. lost as well the Lobos Islands, valuable for their rich guano deposits. Chili occupies also the other Peruvian provinces of Tacna and Arica for 10 years; the ultimate destiny of these provinces being left to a plebiscite of the inhabitants. Chili further took possession of the coast provinces of Bolivia, which formerly bordered P. on the south. The country is 1,000 m. in length, 780 m. in extreme breadth along the n. boundary, but is little more than 50 m. wide in the south. The shores are in general rocky and steep; in the s., lofty cliffs rise from the sea; and, in some places, the water close inshore has a depth of 70 to 80 fathoms. Farther n., however, sandy beaches occur. There are few inlets and harbors. Those of Callao (the port of Lima) and Payta afford the most secure anchorage, and the others are Salaverry; Chimbote; Pisco; Islay, formerly the port of Arequipa, now almost superseded by Mollendo, a few m. s.; and Arica in Moquega, through which much of Bolivian trade passes. (Pisagua and Iquique, in Tarapaca, are now Chilian.) Landing by boats is always dangerous, on account of the dreaded surf, occasioned by the swell of the Pacific, which perpetually beats upon the coast; and when goods or passengers must be landed on unsheltered shores, recourse is had to small native rafts.

*Islands.*—The islands on the Peruvian coast, though valuable, are extremely few in number, and small in extent. In the n. are the three Lobos (i.e., *Seal*) Islands. The largest is 5 m. long by 2 m. broad; the others, 30 m. s.w., are much smaller. The islands of Macabi and Guañape, near the Lobos, also contain large quantities of Guano (q.v.). The Chincha Islands, three in number, the most famous of the whole, began to supply Europe and N. America with guano 1841. Each presents, on the e. side, a wall of precipitous rock, with a general slope toward the w. shore. The cavities and inequalities of the surface formerly were filled with guano, and this material covered the w. slopes to within a few feet of the water's edge. There was no vegetation. The North Island has an area of 202

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acres: it is formed of felspar and quartz, and is slowly but certainly decreasing in size. This island was formerly wholly covered with thick layers of guano, which was quarried in some places to a depth of 80 ft. Hundreds of convicts were employed in cutting the guano and loading the vessels. The Chincha Islands ceased to be worked for foreign export 1872; a little guano was still taken for Peruvian use from the n. island. More than 8,000,000 tons had been obtained from this one source. In 1874, however, valuable new deposits of guano were discovered on the s. coast of Peru (now Chilian).

The grand physical feature of the country, and the source of all its mineral wealth, is the great mountain system of the Andes. For a general description of the formation and character of the Peruvian Andes, see **ANDES**.

*Surface, Soil, and Climate.*—The surface of P. is divided into three distinct and well-defined tracts or belts, whose climates are of every variety, from torrid heat to arctic cold, and whose productions range from the stunted herbage of the high mountain slopes to the oranges and citrons, the sugar-canes and cottons, of the luxuriant tropical valleys. These three regions are the *Coast*, the *Sierra*, and the *Montaña*.—The *Coast* is a narrow strip of sandy desert between the base of the Western Cordillera and the sea, and extending the whole length of the country. This tract, varying in breadth from 30 to 60 m., slopes to the shore with an uneven surface, marked by arid ridges from the Cordillera, and with rapid descent. It is mostly a barren waste of sand, traversed, however, by numerous valleys of astonishing fertility, most of which are watered by streams that have their sources high on the slopes of the Cordillera. Many of the streams are dry during the greater part of the year. Between these valleys extend deserts, sometimes 90 m. in width, perfectly trackless, covered with a fine, shifting yellow sand, which is often carried about by the wind in pillars 80 to 100 ft. in height. In the coast region, properly so called, rain is unknown. This is caused by the coast of P. being within the region of perpetual s.e. trade-winds. These winds, charged with vapors from the Atlantic, strike on the e. coast of S. America, and traverse that continent obliquely, distributing rains over Brazil. But their vapor is thoroughly condensed by the lofty Cordilleras, and their last particles of moisture are exhausted in powdering the summits of these ranges with snow, after which they fall down on the coast of P., cool and dry. The lack of rain, however, is compensated for to some extent by abundant and refreshing dews during the night. The climate of the coast is modified by the cool winds. In the valleys, the heat, though considerable, is not oppressive. The highest temperature observed at Lima in summer is 85°, lowest in winter 61°, F.

The *Sierra* comprises all the mountainous region be-

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tween the w. base of the maritime Cordillera and the e. base of the Andes, or the Eastern Cordillera. These ranges are, in this country, about 100 m. apart on an average, and have been estimated to cover 200,000 sq. m. Transverse branches connect the two ranges; and high plateaux, fertile plains, and deep tropical valleys lie between the lofty outer barriers. The superiority in elevation alternates between the two principal ranges. The e. range, or, as it is generally called, the Andes, has the superiority in height in the s. half of this mountain system. It abuts on the plain, from the Bolivian frontier, in a majestic mass, surmounted by stupendous pinnacles, rugged in outline, and most frequently rising in splintered needle-like peaks, covered with snow. N. of lat. 13° s., however, the Western Cordillera assumes the grander character, and preserves it until it crosses the n. frontier. The scenery of the Western Cordillera is broader and more massive in character, and its summits less pointed than those of the Andes. Rugged paths, sometimes so narrow as barely to afford footing to the mules invariably used in such ascents, lead up its steep sides. Occasionally, from these narrow passes, gaping and apparently bottomless precipices drop perpendicularly downward from the very feet of the traveller, and the prospect is rendered still more frightful by the distant roar of a torrent, hidden by mists, at the bottom of the chasm. Occasionally, also, the mountain route leads over abysses 500 ft. in depth, across which, as bridge, a few poles are thrown, which roll uncomfortably about under the feet. In traversing these dangerous passes, which line the huge rocks like aerial threads, the traveller often comes on most picturesque and beautiful scenery. The clefts and sides of the hills, even at altitudes which may be called Alpine, are clothed with wild flowers, many of which, now long cultivated in northern countries, have become highly prized as garden-plants. Verbenas, lupines, blue and scarlet salvias, fuchsias, calceolarias, and the fragrant heliotrope add a sense of beauty to the sense of power which the stupendous scenery imparts. The following are the most striking and distinctive physical features of the Sierra, beginning from the s. : 1. The plain of Titicaca, partly in P., partly in Bolivia, is inclosed between the two main ridges of the Andes, and is said to have an area of 30,000 m.—greater than that of Maine or of Ireland. In its centre is the great Lake Titicaca, 12,846 ft. above sea-level, or 1,600 ft. above the loftiest mountain pass (the Col of Mont Cervin) of Europe. The lake is 115 m. long, 30 to 60 m. broad, 70 to 180 ft. deep, 400 m. in circumference. Its shape is irregular; it contains many islands, and several peninsulas abut on its waters. 2. The Knot of Cuzco: the mountain chains which girdle the plain of Titicaca trend toward the n.w., and form what is called the Knot of Cuzco. The Knot comprises six minor mountain chains, and has an area thrice larger than that of Switzerland. Here the valleys have an E. Indian cli-

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mate, and are rich in tropical productions; n. and e. of the Knot extend luxuriant tropical forests, while the numberless mountain slopes are covered with waving crops of wheat, barley, and other cereals, and with potatoes; and, higher up, extend pasture-lands, where the vicuña and alpaca feed. 3. The valley of the Apurímac, 30 m. in average breadth, extending n.w. about 300 m.: this valley is the most populous region of Peru. 4. The Knot of Pasco: from Cuzco proceed two chains toward the n.w.; they unite again in the Knot of Pasco, which contains the table-land of Bombon, 12,300 ft. above sea-level, as well as other table-lands at a height of 14,000 ft., highest in the Andes; otherwise, however, the physical features of the country resemble those of the vicinity of Cuzco. 5. The vale of the river Marañón: this valley, more than 300 m. in length, is narrow, deep, and nearer the equator than any other valley of the Sierra; consequently, it is the hottest portion of this region, and its vegetation is thoroughly tropical in character. The conformation of the surface of the Sierra is very wonderful. After the table-lands of Tibet, those of the Peruvian Andes are the highest in the world; but, unlike those of Tibet, which are mere grassy uplands, the table-lands of P. are the seat of a comparatively high civilization, and are studded with towns and villages, perched on heights exceeding in elevation the summits of the Jungfrau and the Wetterhorn. Nor are such towns the mere eyries of miners who are tempted to ascend thus high in search of the precious metals; for, even at this elevation, the climate is pleasant, and wheat, maize, barley, rye, and potatoes thrive well. The city of Cuzco, in a region of rare beauty, and with a temperate climate, is 11,380 ft. above sea-level, or 2,000 ft. higher than the great St. Bernard. The climate of the Sierra, however, is not always so charming. In general terms, it may be described as mild and variable, with moderate rains. In the district of Paucartambo, rain falls 300 days in the year. A country, however, of such uneven surface, of snow-covered peaks and tropical valleys, embraces every variety of climate. In all the lower regions of the country the climate is warm, but healthful; in the uplands, and on the highest plateaux, it is often inclement. Violent storms beat on the plain of Titicaca; and terrific tempests, accompanied by thunder and lightning, roll frequently around the table-lands of Pasco (q.v.), where, indeed, the climate is so cold that, but for the mines, which have attracted hither a numerous population, this region might have remained uninhabited. At the height of 9,000 ft. above sea-level, the mean temperature is 60° Fahrenheit, and the variation throughout the year is not great. The highest peaks of the country rise above 22,000 ft., and many peaks in both ranges are 17,000 to 20,000 ft. high. In the Western Cordillera, and in the s. of the country, are four volcanoes—Candarave, Ubinas, Omate, and Arequipa. The soil of the Sierra is of great variety; but wherever it is cultivated, it is productive.

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The *Montaña*, forming two-thirds of the entire area of the country, stretches away hundreds of leagues e. from the Andes, to the confines of Brazil. On the n. it is bounded by the Amazon, on the s. by Bolivia. It consists of vast, impenetrable forests and alluvial plains, is rich in all the productions of tropical latitudes, is of inexhaustible fertility, and teems with animal and vegetable life. It is still, however, almost wholly unproductive to man. The silence of its central forests has never been disturbed by the civilized explorer, and its only human inhabitants are a few scattered tribes of Indians. The *Montaña* is watered by numberless streams and by a large number of important rivers. It belongs wholly to the basin of the Amazon. Along the head-waters of the Purus, which, flowing through beautiful forest-covered plains, approaches within 60 m. of Cuzco, there were formerly numerous Spanish farms, where great tracts of forests had been cleared, and where crops of coca, cocoa, sugar, and other tropical productions, were regularly raised. These farms have, since 1861, been abandoned, and the encroaching forest has already obliterated their sites. The upper waters of the Purus are the headquarters of a savage and barbarously cruel tribe of wild Indians, called Chunchos. These untamable savages have shown the greatest hostility to the advance of civilization. They murdered the settlers, or drove them to take refuge in some less advanced settlement. When Markham visited this region 1853, a few farms remained; in a paper, however, which he communicated to the *Journal of the Royal Geographical Soc.*, dated 1861, he further reported that the Chunchos have finished their barbarous work, for the settlers have either all been massacred or driven back from the forest, so that now not a single settlement remains. The rich valleys of Paucartambo, once covered with flourishing Spanish farms, have again become one vast tropical forest. The virgin soil of the *Montaña* is of amazing fertility; and its climate, not oppressively hot, is healthful. The forests consist of huge trees, of which some are remarkable for beauty of their wood, others for valuable gums and resins, others as timber-trees. A rank undergrowth of vegetation covers the country, and the trees are often chained together and festooned with parasites and closely matted creepers. In this region, mostly undisturbed by the voice of man, civilized or savage, animal life flourishes in endless variety, and birds of the brightest plumage flit among the foliage. Among the products yielded here in spontaneous abundance are the inestimable Peruvian bark (see CINCHONA), India-rubber, gum copal, vanilla, indigo, copaiba, balsam, cinnamon, sarsaparilla, ipecacuanha, vegetable wax, etc. On the w. fringe of the *Montaña*, where there are still a few settlements, tobacco, sugar, coffee, cotton, and chocolate are cultivated with complete success.

*Hydrography.*—The hydrography of P. may be divided into three systems—those of Lake Titicaca, the Pacific,

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and the Amazon. The streams that flow into Lake Titicaca are few and inconsiderable. The rivers which, having their sources in the Western Cordillera, flow w. into the Pacific, are about 60 in number; but many of them are dry in summer, and even the more important are rapid and shallow, have a short course, are not navigable even for canoes, and are used mainly for irrigation. All the great rivers of P. are tributaries of the Amazon. The Marañon, rising between the E. and W. Cordilleras, and flowing tortuously to the n.n.w., is generally considered the head-water of the Amazon (q.v.). The Huallaga rises near the town of Huanuco, and flows n. to the Amazon: it is navigable 600 m., the head of its navigation (for canoes) being at Tingo Maria, within 100 m. of its source. The Yucayali, or Ucayali, an immense river, enters the Amazon 210 m. below the Huallaga: its tributaries and upper waters, among which are the Pampas and the Apurimac, drain the greater portion of the Peruvian Sierra. The Purus, which reaches to the valleys of Paucartambo, within 60 m. of Cuzco, has recently been explored. Several of its sources are known; and it enters the Amazon by four mouths, a little above Barra. It flows through what is perhaps the richest and most beautiful region of Peru. Many attempts have been made to explore this river, but none were successful till Chandless (1865-6) explored it and its tributary, the Aguirey. Sailing down the Rio Negro, from Manoa to the Amazon, he reached the mouth of the Purus, and ascended 1,866 m. He found that it flowed in a tortuous course through a rich alluvial plain, and that the few Indians on its upper course were still as primitive as is indicated by the use of only stone hatchets. He ascertained that the Rio Madre de Dios is not the head-water of the Purus. He then ascended the Aguirey, principal affluent of the Purus, in the hope that it might afford communication with that south-Peruvian river, but failed, owing to difficulties insuperable by him, to settle the question.

*Productions, Exports and Imports, Revenues, etc.*—The wealth and resources of P. consist, not in manufactures, but entirely in mineral, vegetable, and animal products. As no statistics are taken in the country, it is impossible to give the quantity and value of the productions, and of exports and imports, even approximately. Of the precious metals, the production has greatly fallen off since P. became an independent state; and this country, which formerly stood in the same relation to Spain that Australia does to Great Britain, now contributes little to the metallic wealth of the world. The immense stores of gold and silver found here by the Spanish invaders represented the accumulation of centuries, and that among a people who used the precious metals only for ornamentation. Nevertheless, P. possesses vast metallic riches. The Andes abound in mines of gold, silver, copper, lead, bismuth, etc.; and in the Montaña, gold is said to exist in abundance in veins and in pools on the margins of rivers.

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The public revenue of P. is derived mainly from the sale of guano, and only to a small extent from customs. The consequences of the war (1879-81) brought serious decline in trade. Thus, while the exports from P. to Great Britain 1878 had a value of \$25,427,520, in 1882 it was only \$12,049,100; while the imports fell from \$6,658,200 to \$4,782,240 in the same years. The imports 1887 were \$8,658,531; exports \$8,872,287. P. trade with the United States in recent years was: imports: (1886) \$798,577; (1887) \$717,968; (1888) \$865,160; (1889) \$773,244: exports: (1886) \$963,480; (1887) \$461,726; (1888) \$309,040; (1889) \$314,032. The national receipts 1887-8 were \$16,183,674; expenditures \$13,632,386. The loss of the guano of the Lobos Islands, and of the nitrate deposits of Tarapaca (now Chilian), proved a severe blow to the revenue of P. The internal debt of P. (1887-8) was \$136,246,870, including \$87,010,923 paper money and Inca notes; the foreign debt of \$155,520,000 was cancelled by the Grace-Donoughmore contract with P. bondholders (see below). Besides the precious metals, P. possesses other most important mineral resources. In addition to the guano, an important article of national wealth is nitrate of soda, found in immense quantities in the province of Tarapaca (now Chilian). This powerful fertilizer (see NITRE) has been estimated to cover, in this province alone, between 400 and 500 sq. m., and the quantity has been estimated 63,000,000 tons. Great quantities of borax also are found. The working of this valuable substance, however, is interdicted by government, which made a monopoly of it, as of the guano. In 1878 there were in P. 1,200 m. of railway completed, and several hundreds in course of construction, including a line across the summit of the Cordillera de los Andes, and presenting engineering difficulties even more extraordinary than those overcome in the Mont Cenis Tunnel.

The vegetable productions of P. are of every variety, embracing all the products both of temperate and of tropical climes. The European cereals and vegetables are grown with perfect success, with maize, rice, pumpkins, tobacco, coffee, sugar-cane, cotton, etc. Fruits of most delicious flavor are grown in endless variety. Cotton, for which the soil and climate of P. are admirably adapted, is produced in gradually increasing quantity. The land suited to the cultivation of this plant is of immense extent, and the quality of the cotton grown is excellent. The animals comprise those of Europe, together with the Lama (q.v.) and its allied species. Although P. produces so much excellent wool, almost the whole of the woollen fabrics used as clothing by the Indians are manufactured in Yorkshire, England.

*Ancient Civilization and History.*—P., the origin of whose name is unknown, is now passing through its third historical era, and is manifesting its third phase of civilization. The present era may be said to date from the conquest of the country by the Spaniards in the early part of the 16th c.; the middle era comprises the



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rule of the Incas ; and the earliest era, about which exceedingly little is known, is that Pre-Incarial period, of unknown duration, during which a nation or nations living in large cities flourished in the country, and had a civilization, a language, and a religion, different, perhaps in some cases more advanced, than those of the Incas who succeeded them and overran their territories. Whence these Pre-Incarial nations came, and to what branch of the human family they belonged, remain unanswered questions. Their existence, however, is clearly attested by the architectural remains, sculptures, carvings, etc., which they have left. Ruins of edifices constructed both before the advent of the Incas, and contemporary with, and independently of, them, are found throughout the country. On the shores of Lake Titicaca, e.g., are the ruins of Tia-Huanacu, consisting of sculptured monolithic doorways, one of which is 10 ft. high and 13 ft. wide ; of pillars, 21 ft. high, placed in lines at regular distances ; and of immense masses of hewn stone, some being 38 ft. long by 18 broad. In 1846 several colossal idols were excavated, some being 30 ft. long, 18 wide, and 6 thick. The idols are in the form of statues, and the ears are not enlarged by the insertion, in the lobes, of silver rings, as those of sculptured figures executed in Incarial times invariably are. The ancient fragments of buildings on these shores were beheld with astonishment by the earliest of Incas, who, by their own confession, accepted them as models for their own architecture. The name Tia-Huanacu is comparatively modern, having been conferred by one of the Incas ; neither history nor tradition has handed down the original name. The ruins are 12,930 ft. above sea-level, and one of the many mysteries which have crowded around this ancient site is that this spot, in the midst of what is now generally a frozen desert, and where the rarity of the air must be so great as to be hurtful, should have been chosen as the seat, as it is generally believed to have been, of an ancient government. Of the character and degree of the civilization of the Pre-Incarial races, almost nothing is known. It is worthy of note, however, that at Pachacamac, 25 m. s. of Lima, where are the remains of a now wholly deserted city, and of a great temple, the religion seems to have been a pure Theism ; for when the Peruvians of Cuzco carried their victorious arms across the Cordilleras to this district, they beheld this temple (the doors of which are said to have been of gold inlaid with precious stones) with astonishment, not only because it rivalled, if not surpassed, in splendor the famous Temple of the Sun at Cuzco, but because it contained no image or visible symbol of a god. It was raised in honor of an invisible and mysterious deity, whom the inhabitants called Pachacamac, Creator of the World (from two words of the anc. Peruvian language : *Pacha*, the earth ; and *Camac*, participle of the verb *Camani*, to create). The Peruvians did not dare to destroy this temple, but contented themselves with building at its side a

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Temple of the Sun, to the worship of which they gradually won over the inhabitants.—See Bollaert's *S. America* (1860); Squier's *Peru* (1876); Markham's *Peru* (1880); Gallenga's *S. America* (1880); Reiss and Stübel, *Peruvian Antiquities* (1881).

Regarding the origin of the Incas, nothing definite can be said. We have no authorities on the subject except the traditions of the Indians; and these, besides being outrageously fabulous in character, are also conflicting. It appears, however, from all the traditions, that Manco, the first Inca, first appeared on the shores of Lake Titicaca, with his wife, Mama Ocllo. He announced that he and his wife were children of the Sun, and were sent by the glorious Inti (the Sun) to instruct the simple tribes. He is said to have carried with him a golden wedge, or, as it is sometimes called, a wand. Wherever this wedge, on being struck upon the ground, should sink into the earth, and disappear forever, there it was decreed Manco should build his capital. Marching northward, he came to the plain of Cuzco, where the wedge disappeared. Here he founded the city of Cuzco, became the first Inca (a name said to be derived from the Peruvian word for the Sun), and founded the Peruvian race, properly so called. Manco, or Manco Capac (i.e., Manco the Ruler), instructed the men in agriculture and the arts, gave them a comparatively pure religion, and a social and national organization; while his wife, Mama Ocllo, who is represented as being also his sister, taught the women to sew, to spin, and to weave. Thus, the Inca was not only ruler of his people, but also the father and the high-priest. The territory held by Manco Capac was small, extending about 90 m. from e. to w., and about 80 m. from n. to s. After introducing laws among his people, and bringing them into regularly organized communities, 'he ascended to his father, the Sun.' The year generally assigned as that of his death, after a reign of 40 years, is A.D. 1062. The progress of the Peruvians was at first so slow as to be almost imperceptible. Gradually, however, by their wise and temperate policy, they won over the neighboring tribes, who readily appreciated the benefits of a powerful and fostering government. Little is clearly ascertained regarding the early history of the Peruvian kingdom, and the lists given of its early sovereigns are not at all to be trusted. They invented no alphabet, therefore could keep no written record of their affairs; so that almost all we can know of their early history is derived from the traditions of the people, collected by the early Spaniards. Memoranda were indeed kept by the Peruvians, and, it is said, even full historical records, by means of the *quipu*, a twisted woollen cord, upon which other smaller cords of different colors were tied. Of these cross-threads, the color, the length, the number of knots on them, and the distance of one from another, all had their significance; but after the invasion of the Spaniards, when the whole Peruvian system of government and civilization un-

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derwent dislocation, the art of reading the quipus seems either to have been lost, or was effectually concealed. Thus it is that we have no exact knowledge of Peruvian history further back than about one century before the coming of the Spaniards. In 1453 Tupac Inca Yupanqui, eleventh Inca, according to the list given by Garcilasso de la Vega, greatly enlarged his already widespread dominions. He led his armies southward, crossed into Chili, marched over the terrible desert of Atacama, and, penetrating as far s. as the river Maule (lat.  $36^{\circ}$  s.), fixed there the s. boundary of Peru. Returning, he crossed the Chilian Andes by a pass of unequalled danger and difficulty, and at length regained his capital, which he entered in triumph. While thus engaged, his son, the young Huayna Capac, heir to the fame, as well as the throne, of his father, had marched n. to the Amazon, crossed that barrier, and conquered the kingdom of Quito. In 1475 Huayna Capac ascended the throne, and under him the empire of the Incas attained its greatest extent, and the height of its glory. His sway extended from the equatorial valleys of the Amazon to the temperate plains of Chili, and from the sandy shores of the Pacific to the marshy sources of the Paraguay. Of this immense territory, Cuzco, as its name implies (the word signifies navel), was the great centre; great roads branched off from it n., e., s., and w., and ramified through every part of the kingdom. The greatest highway of the country was that from Quito, through Cuzco, into the Chilian dominions. In its construction, galleries were cut for leagues through the living rock; rivers were crossed by bridges of plated osiers, that swung in the air; precipices were ascended by staircases artificially cut; and valleys were filled up with solid masonry. It was 1,500 to 2,000 m. long, about 20 ft. broad, built of heavy flags of freestone. On all the great routes were posts or small buildings, about 5 m. apart, attached to which were a number of runners, whose business it was to carry forward the dispatches of government. By means of these messengers, fresh fish caught on one day at Lurin, on the Pacific, is said to have been eaten the next day at Cuzco, at a distance of 300 m., over a road traversing the wildest and most mountainous country in the world. Order and civilization accompanied conquest among the Peruvians, and each tribe that was vanquished found itself under a careful paternal government, which provided for it, and fostered it in every way.

The government of P. was a pure, though mild, despotism. The Inca, as the representative of the Sun, was the head of the priesthood, and presided at the great religious festivals. He imposed taxes, made laws, and was the source of all dignity and power. He wore a peculiar head-dress, of which the tasselled fringe, with two feathers placed upright in it, was the proper insignia of royalty. Of the nobility, all those descended by the male line from the founder of the monarchy shared, in

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common with the ruling monarch, the sacred name of Inca. They wore a peculiar dress, enjoyed special privileges, and lived at court; but none of them could enter the presence of the Inca except with bare feet, and bearing a burden on the shoulders, in token of allegiance and homage. They formed, however, the real strength of the empire; and, being superior to the other races in intellectual power, they were the fountain whence flowed that civilization and social organization which gave P. a position above every other state of S. America. Prior to the arrival of the Spaniards, P. contained a pop. of 30,000,000—twelve times greater than at the present day. The empire was divided into four parts, into each of which one of the great roads branched from Cuzco. Each of the four provinces was administered by a viceroy or governor. The nation was further subdivided into departments of 10,000 inhabitants, each also administered by a gov.; and there were other subdivisions into various numbers, the lowest of which was ten, and every one of which was ruled by headmen, who were responsible for offenders, and were required to see that those under them enjoyed the rights to which they were entitled. The governors and chief rulers were selected from the Inca aristocracy. The laws related almost wholly to criminal matters, and were few, and remarkably severe. Theft, adultery, murder, blasphemy against the Sun, and burning of bridges, all were capital crimes. The territory of the empire was divided into three portions, and from these portions was derived the revenue that supported the *Sun*, the *Inca*, and the *people*, respectively. The numerous priesthood, and the costly ceremonial of the national worship, were supported by the first; the royal household and the govt. expenditure were defrayed out of the second; and the people, at so much per head, divided the third of these portions. There was a new division of the soil every year, and the extent of land apportioned to each householder was regulated by the numbers in his family. It might be supposed that this arrangement would be fatal to improvement of the soil, and to the pride in and love of home; but this was not the case; and it is probable that, at each partition of the soil, the tenant was, as a rule, confirmed in his occupation. The three divisions were cultivated by the people, the territory apportioned to the Sun being attended to first, that belonging to the people themselves next, and, lastly, the division belonging to the Inca. The labor on the Inca's share of the land was engaged in by the whole population at the same time, and the work was lightened by the national songs and ballads, and the scene made picturesque by the holiday attire of the workers. The manufactures of the country were managed in the same way, the people laboring first in making clothes for themselves, and afterward giving their work to the Inca. The mines were worked by the people, but no one gave more than a certain amount of time to the govt. service (during which time he was maintained at

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govt. expense); and after discharging the stipulated amount of duty, he was succeeded by another. Money was unknown among the Peruvians. They were a nation of workers, but they wrought as the members of one family, labor being enforced on all, for the benefit of all.

The national policy of the Peruvians had its imperfections and drawbacks, and, though capable of unlimited extension, it was not capable of advancement. It was in the last degree conservative, and was of such a nature that the introduction of reform in any vital particular must have overturned the whole constitution. Nevertheless, the wants of the people were few, and these were satisfied. Their labor was not more than they could easily perform, and it was pleasantly diversified with frequent holidays and festivals. They lived contentedly and securely under a government strong enough to protect them; and a sufficiency of the necessaries of life was obtained by every individual. Still, in the valleys of the Cordilleras and on the plain of Cuzco may be heard numberless songs in which the Peruvian mourns the happy days of peace, security, and comfort enjoyed by his ancestors. Further, they revered and loved their monarch, and considered it a pleasure to serve him. With subjects of such a temper and inclination, the Incas might direct the entire energies of the nation as they chose; and it is thus that they were able to construct those gigantic public works which would have been wonderful even had they been performed with the assistance of European machinery and appliances.

The Peruvian system of agriculture was brought to its highest perfection only by the prodigious labor of several centuries. Not only was the fertile soil cultivated with the utmost care, but the sandy wastes of the coast, unvisited by any rains, and scantily watered by brooks, were rendered productive by an artificial system of irrigation, the most stupendous, perhaps, that the world has ever seen. Water was collected in lakes among the mountains, and led down the slopes and through the sands of the coast, apparently doomed to sterility, by canals and subterranean passages constructed on a vast scale, and the ruins of which, at the present day, attest the industry, ingenuity, and admirable patience of the Peruvians. The aqueducts, sometimes between 400 and 500 m. in length, were in some cases tunnelled through massive rocks, and carried across rivers and marshes. They were constructed of large slabs of freestone, fitting so closely as to require no cement, and answering perfectly the purpose for which they were intended; for the sandy wastes were converted into productive fields and rich pasture-lands, and the coast teemed with industrious inhabitants. In the valley of Santa there were 700,000 inhabitants; there are now only 12,000: in that of Ancullama, there were 30,000; there are now only 425. The fields on the coast were enriched also with the

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manure of sea-fowls, which has since come to be known as guano. Fragments of the aqueducts still remain, and are surveyed with astonishment by the traveller, who wonders that such works could have been constructed by a people who appear to have employed no machinery, had no beasts of burden, who did not know the secret of the true arch, and who did not use tools or instruments of iron. But the triumphs of industry were not more decided on the coast than in the *Sierra*. Here, at elevations visited now only by the eagle and the condor, the rocky heights, riven by innumerable chasms and deeply cut precipices, were crowned with waving crops of wheat and maize. Where the mountain slopes were too steep to admit cultivation, terraces were cut, soil was accumulated on them, and the level surfaces converted into a species of hanging gardens. Large flocks of llamas were grazed on the plateaux; while the more hardy vicuñas and alpacas roamed the upper heights in freedom, to be driven together, however, at stated periods, to be shorn or killed. The wool yielded by these animals, and the cotton grown in the plains and valleys, were woven into fabrics remarkable equally for fineness of texture and brilliancy of color.

The character of the architecture of the Peruvians has been alluded to. The edifices of Incarial times are oblong in shape and built with large polygonal blocks of stone—now known as ‘Cyclopean masonry.’ Although the buildings of Peru were erected probably about the 12th c. after Christ, they possess an extraordinary likeness to those of the Pelasgi in Europe. This resemblance in style must be accidental, arising probably from the fact that both nations used bronze tools and were unacquainted with iron. The jambs of the doorways slope inward, like those of Etruscan tombs, and have similar lintels. The walls of Cuzco are good examples of this style. It is further remarkable that these walls are built with re-entering angles, like the fortifications which were adopted in Europe only after the invention of gunpowder.

The materials used in P. were granite, porphyry, and other varieties of stone; but in the more rainless regions, sun-dried bricks also were much used. The walls were most frequently of stones of irregular size, but cut with such accuracy, and fitting into each other so closely at the sides, that neither knife nor needle can be inserted in the seams. Though the buildings were not usually more than from 12 to 14 ft. high, they were characterized by simplicity, symmetry, and solidity. The Peruvian architects did not indulge much in external decoration; but the interior of all the great edifices was extremely rich in ornament. In the royal palaces and temples, the most ordinary utensils were of silver and gold; the walls were thickly studded with plates and bosses of the same metals; and exquisite imitations of human and other figures, and of plants, fashioned with perfect accuracy in gold and silver, were always seen in

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the houses of the great. Hidden among the metallic foliage, or creeping among the roots, were many forms of brilliantly colored birds, serpents, lizards, etc., made chiefly of precious stones; while in the gardens, interspersed among the natural plants and flowers, were imitations of them, in gold and silver, of such truth and beauty as to rival nature. The 'Temple of the Sun at Cuzco, called *Coricancha*, or 'Place of Gold,' was the most magnificent edifice in the empire. On the w. wall, opposite the e. portal, was a splendid representation of the Sun, the god of the nation. It consisted of a human face in gold, with innumerable golden rays emanating from it in every direction; and when the early beams of the morning sun fell upon this brilliant golden disk, they were reflected from it as from a mirror, and again reflected throughout the whole temple by the numberless plates, cornices, bands, and images of gold, until the temple seemed to glow with a sunshine more intense than that of nature.

The religion of the Peruvians, in the later ages of the empire, was far in advance of that of most barbarous nations. They believed in a Great Spirit, Creator of the universe, who, being a spirit, could not be represented by any image or symbol, nor be made to dwell in a temple made with hands. They believed also in the existence of the soul hereafter, and in the resurrection of the body. The after-life they considered to be a condition of ease and tranquillity for the good, and of continual wearisome labor, extending over ages, for the wicked. But, while they believed in the Creator of the world, they believed also in other deities, who were of some subordinate rank to the Great Spirit. Of these secondary gods, the Sun was the chief. They revered the Sun as the source of their royal dynasty; and everywhere throughout the land, altars smoked with offerings burned in his worship.

About 1516, ten years before the death of Huayna Capac, the first white man had landed on the w. shores of S. America; but it was not till 1532 that Pizarro (q.v.), at the head of a small band of Spanish adventurers, actually invaded Peru. On his death-bed, the great Inca expressed a wish that the kingdom of Quito should pass to Atahualpa, one of his sons by a princess of Quito whom he had received among his concubines, and that all his other territories should fall to his son Huascar, the heir to the crown, and who, according to the custom of the Incas, should have inherited all its dependencies. Between these two princes, quarrels, resulting in war, arose; and when Pizarro entered P., he found the country occupied by two rival factions, a fact of which he took full advantage. Atahualpa had completely defeated the forces of his brother, had taken Huascar prisoner, and was now stationed at Caxamalca, on the e. side of the Andes, whither, with a force of 177 men, of whom 27 were cavalry, the dauntless Spanish leader, 1532, Sep., set out to meet him. For the capture of Atahualpa by

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the Spaniards, his subsequent life and violent death, see **ATAHUALPA**. Shortly after his death at Caxamalca, the foreign adventurers set out for Cuzco. Their strength had been recently increased by reinforcements, and they now numbered nearly 500 men, of whom about a third were cavalry. They entered the Peruvian capital 1533, Nov. 15, having, in their progress toward the city of the Incas, had many sharp and sometimes serious encounters with the Indians, in all of which, however, their armor, artillery, and cavalry gave them the advantage. At Cuzco they obtained a vast amount of gold, the one object for which the conquest of P. was undertaken. As at Caxamalca, the articles of gold were mostly melted into ingots, and divided among the band. Their sudden wealth, however, did many of them little good, as it afforded them the means of gambling; and many of them, rich at night, found themselves again penniless adventurers in the morning. One cavalier, having obtained the splendid golden image of the Sun as his share of the booty, lost it in play in a single night. After stripping the palaces and temples of their treasures, Pizarro placed Manco, a son of the great Huayna Capac, on the throne of the Incas. Leaving a garrison in the capital, he then marched w. to the sea-coast, with the intention of building a town, from which he could more easily repel invasion from without, and which should be the future capital of the kingdom. Choosing the banks of the river Rimac, he founded, about six m. from its mouth, the *Ciudad de los Reyes*, 'City of the Kings.' Subsequently, its name was changed to Lima, the modified form of the name of the river on which it was placed. But the progress of a higher civilization, thus begun, was interrupted by an event which overturned the plans of the general, and entailed the severest sufferings on many of his followers. The Inca Manco, insulted on every hand, and in the most contemptuous manner, by the proud Castilian soldiers, effected his escape, and headed a formidable rising of the natives. Gathering round Cuzco in immense numbers, the natives laid siege to the city, and set it on fire. An Indian force also invested Xauxa, and another detachment threatened Lima. The siege of Cuzco was maintained for five months, after which time the Peruvians were commanded by their Inca to retire to their farms, and cultivate the soil, that the country might be saved from famine. The advantages, many, though unimportant, which the Inca gained in the course of this siege, were his last triumphs. He afterward retired to the mountains, where he was massacred by a party of Spaniards. More formidable, however, to Pizarro, than any rising of the natives, was the quarrel between himself and Almagro, a soldier of generous disposition, but of fiery temper, who, next to Pizarro, held the highest rank among the conquerors. For the insurrection, trial, and death of this chief by execution, see **ALMAGRO**. The condition of the country was now in every sense deplorable. The natives, astonished



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not more by the appearance of cavalry than by the flash, the sound, and the deadly execution of artillery, had succumbed to forces which they had no means of successfully encountering. Meantime, the Almagro faction had not died out with the death of its leader, and they still cherished schemes of vengeance against the Pizarros. It was resolved to assassinate the general as he returned from mass on Sunday, 1541, June 26. Hearing of the conspiracy, but attaching little importance to the information, Pizarro nevertheless deemed it prudent not to go to mass that day. His house was assaulted by the conspirators, who, murdering his servants, broke in on the great leader, overwhelmed him by numbers, and killed him (see PIZARRO). The son of Almagro then proclaimed himself governor, but was soon defeated in battle, and put to death. In 1542 a council was called at Valladolid, at the instigation of the ecclesiastic Las Casas, who felt shocked and humiliated at the excesses committed on the natives. The result of this council was that a code of laws was framed for P., according to one clause of which, the Indians who had been enslaved by the Spaniards were virtually declared free men. It was also enacted that the Indians were not to be forced to labor in unhealthful localities, and that, in whatever cases they were desired to work in any particular locality, they were to be fairly paid. These and similar clauses enraged the adventurers. Blasco Nuñez Vela, sent from Spain to enforce the new laws, rendered himself unpopular, and was seized, and thrown into prison. He had come from Spain, accompanied by an 'audience' of four, who now undertook the government. Gonzalo Pizarro (the last in this country of the family of that name), who had been elected capt.gen. of P., now marched threateningly upon Lima. He was too powerful to withstand, and the audience received him in a friendly manner, and, after the administration of oaths, elected him gov. as well as capt.gen. of the country. The career of this adventurer was cut short by Pedro de la Gasca, who, invested with the powers of the sovereign, arrived from Spain, collected a large army, and pursued Gonzalo Pizarro, who was eventually taken and put to death.

A series of petty quarrels, and the tiresome story of the substitution of one ruling functionary for another, make up a great part of the subsequent history. The country became one of the four vice-royalties of Spanish America, and the Spanish authority was fully established and administered by successive viceroys. The province of Quito was separated from P. 1718; and 1788 considerable territories in the s. were detached, and formed into the govt. of Buenos Ayres. At the outbreak of the War of Independence in S. America, the Spanish govt., besides having much declined in internal strength, was distracted with the dissensions of a regency, and torn by civil war; nevertheless, 1820, the Spanish viceroy had an army of 23,000 men in P., and all the large

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towns were completely in the hands of Spanish officials. P. was the last of the Spanish S. American possessions to set up the standard of independence. 1820, Aug., a rebel army, under Gen. San Martin, one of the liberators of Chili, sailed for P.; and after a number of successes, both on sea and land, in which the patriots were most effectively assisted by English volunteers, the independence of the country was proclaimed 1821, July 28, and San Martin assumed the protectorate of the young republic. From this date to 1860, under various titles, 21 rulers have held sway. For the first 24 years of its existence as an independent republic, the country was distracted and devastated by wars and revolutions. In 1845 Don Ramon Castilla was elected president; and under his firm and sagacious guidance, the country enjoyed an unwonted measure of peace, and became regularly organized. Commerce began to be developed, and important public works were undertaken. The term of his presidency ended 1851, in which year Gen. Rufino José Echenique was elected president. The country, however, was discontented, and Castilla again found himself, 1855, at the head of affairs. Slavery, which, though abolished by the charter of independence, still existed, was ended by a decree dated 1854, Oct. In 1863, Aug., a quarrel had taken place at the estate of Talambo, in the n., between some Basque emigrants and the natives, in which several of the disputants were killed or wounded. Taking advantage of this occurrence, the Spanish govt. sent out a 'special commissioner' in the spring of 1864, to complain of injuries sustained by Spaniards. The 'commissioner' left Lima Apr. 12; and on the 14th, a Spanish squadron, under Admiral Pinzon, took forcible possession of the Chincha Islands. The European consuls protested loudly against this outrage, and the Peruvians were greatly excited. War was, however, averted, Pres. Pezet being unwilling to risk hostilities with Spain; and 1865, Jan., a treaty of peace was signed. This did not lead, however, to internal peace. The pres. was declared a traitor by the assembly in the same month that saw the treaty of peace ratified in the Spanish capital. Gen. Canesco, after a severe struggle, assumed the presidential authority, and retained it till Nov., when Col. Prado was nominated temporary dictator. The obnoxious treaty was now rejected, and P. entered 1866, Jan., into a treaty, offensive and defensive, with Chili (q.v.), which country was then at war with Spain; but this led to no serious consequences to P.—an unsuccessful attack on Callao having vindicated Spanish honor. In Oct., Gen. Prado was regularly elected president, and 1867, Feb., he recommended a new constitution, according to which there is a senate of 44 members and a house of 110 representatives. Prado had to resign 1868; his successor, Balta, was assassinated 1872; Pardo, who was pres. till 1876, was succeeded by Prado. Under Pardo, the country had been peaceful and prosperous, and education had been greatly extended. In

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1879 P., as the ally of Bolivia, became involved in war with Chili. The war was carried on desultorily 1879 and 80 : Arica was besieged and taken ; the most powerful Peruvian iron-clads were sunk or captured ; finally, 1881, Callao and Lima were taken and occupied by the Chilians. The victors imposed on the vanquished the severe terms above stated, and held possession of the country till the ratification of the treaty of peace, 1883, Oct. 22. Then ensued a period of national unrest, caused in part by local and political disturbances, but more particularly by the burden of the foreign debt. This was held in countries with which P. desired the friendliest relations ; but with the chief source of her revenue taken away by the treaty of peace, and with an increasing and pressing home debt, her financial condition appeared hopelessly complicated. In 1886 William R. Grace, of New York, representing the European bondholders of P., submitted a proposal to the govt. for the cancellation of part of the foreign debt in return for various railroad concessions. Dr. Aranibar was chosen commissioner of P. to treat with Mr. Grace. As the negotiations progressed, their range increased. The bondholders pooled their interests, formed a syndicate, and made a formal proposition to the govt. of P. to assume the payment of the entire national debt for concessions to it covering a period of 66 years. A contract to carry out the provisions of the proposal was drawn, and, after long discussion in the Peruvian congress, was formally approved by it 1889, Oct. 25. The foreign debt then amounted to \$160,000,000, and the internal to \$100,000,000, both with interest long defaulted. Chili was made a party to the contract, and signed a protocol, under which she agreed to restore the Lobos Islands to P. and to return 80 per cent. of the proceeds of the sales of guano since 1882, Feb. Under the joint contract, P. was released from responsibility for the loans of 1869, 70, and 72, nearly all of which was incurred in railroad construction ; and the syndicate took possession of the roads for 66 years, agreeing to complete and operate them and return them to P. at the end of that period. The various roads aggregated about 769 m. The govt. ceded the syndicate, with the consent of Chili, the guano beds at Tarapaca, Huanillos, Pabellon de Ica, Punta de Lobos, and wherever else guano may be found, to the extent of 3,000,000 tons, reserving for home consumption the beds of the Chincha Islands. If the syndicate fail to find the specified amount of guano, P. is not responsible ; but as soon as the amount is found, all the beds are to be restored to the govt. The govt. also ceded the right of navigation on Lake Titicaca ; franchises for valuable mines that could not be worked without further railroad extensions ; 5,000,000 acres of public land, and, for the extension of the railroads to the Bolivian frontier and to the head of navigation on the Amazon river, an additional 15,000 acres for each kilometer of railroad finished ; and the right to use free of expense all the moles or landing-

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places at the different ports. The only cash consideration imposed on the govt. by the contract was the payment to the syndicate, for the bondholders, of \$400,000 per annum for 33 years. Chili ceded, nominally to P. and really to the syndicate, the guano that she held by treaty for the joint benefit of herself and P., equivalent to about \$10,000,000, to aid P. in settling with the foreign bondholders, and to relieve herself of any claim by the bondholders on the province of Tarapaca, which she took from P., and which the bondholders claim was hypothecated to them by P. as security for the debt. After the approval of the contract by the congress of P., the syndicate organized a joint-stock company, under the title of the Peruvian Corporation, with a capital of \$80,190,000; and 1890, Apr., all of its first issue of \$7,500,000 debentures was subscribed within a week.

Under the impetus of this vast contract, the prospects of P. began brightening almost immediately. A new treaty of amity and commerce with the United States was signed, and P. opened negotiations with Chili for the surrender of her lost provinces of Tacna and Arica in advance of the 10-year treaty limitation. A popular vote should in 1894 have decided to which country decision was deferred, and a convention to carry out the plebiscite was rejected by Chili in 1900.

PERU': city in La Salle co., Ill.; on the Chicago Rock Island and Pacific, the Chicago Burlington and Quincy, railroads, and on the Illinois river; 100 m. w. of Chicago. There is one church of each of the five denominations—Congl., Meth. Episc., Irish Rom. Cath., German Rom. Cath., and Lutheran; excellent graded schools, with 800 pupils, and two Rom. Cath. schools, with 300 pupils; one daily and two weekly newspapers; and a national bank (cap. \$50,000). The streets are well graded, are lighted by electricity; and there are two public parks. There is an agricultural-implement factory employing 125 men, a zinc company employing 500 hands, a large clock factory, tile and brick works, scale-works, lumber-mills, and other manufacturing interests. There are large coal mines in the vicinity. Pop. (1870) 3,650; (1880) 4,632; (1890) 5,550; (1900) 6,863.

PERU': city, cap. of Miami co., Ind.; on the Lake Erie and Western and the Wabash railroads, and on the Wabash river; 75 m. n. of Indianapolis. There are seven churches, a high school, one daily and two weekly newspapers, two national banks (cap. \$200,000), and four hotels. It is in a rich agricultural district, and has manufactures of sewing-machines, carriages, baskets, and woolen goods. There are foundries, railroad shops, and a planing-mill. The streets are lighted by gas, and there is a system of water-works. The town was settled 1833, incorporated 1834. Pop. (1880) 5,280; (1890) 7,029; (1900) 8,463.

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PERU'GIA: city of central Italy, cap. of the province of P. (formerly Umbria), 1,550 ft. above sea-level, on a hill 800 ft. high, on the right bank of the Tiber, 10 m. e. of the Lake of P. (anc. *Lacus Trasimenus*), 84 m. n. of Rome. It is surrounded with walls pierced with numerous gates, of which the *Arch of Augustus* (named from the inscription *Augusta Perusia* over it, inscribed by Augustus) is the finest. It is the see of a bishop, and contains more than 45 churches and many monastic establishments. Its streets are wide, and there are several squares lined with massive buildings. The broad Corso, which contains the finest edifices, unites two squares, one of which is occupied by the Duomo, or cathedral, dedicated to San Lorenzo, and dating from the end of the 15th c. It is in a fine bold Gothic style, and contains many excellent paintings, carvings, etc. Many of the churches and convents are noble Gothic structures, and all are more or less famous for their pictures, some of which are by Raphael, Perugino, and other great masters. In the vicinity of the city, a number of tombs, supposed to mark the site of the necropolis of ancient P., were discovered 1840. The tombs contain numerous beautiful *cinerary urns*, in marble and travertine; and lamps, vases, bronze armor, ornaments, pateræ, etc., also were found, but have mostly been removed to a neighboring villa. The Univ. of P., founded 1320, is not one of the 17 state universities, but is supported by the province. It has various museums, and a library of 80,000 vols., with some valuable MSS. The attendance is not numerous. Besides the picture-gallery of the Acad. of Fine Arts, there are numerous private art-collections. P. contains many interesting palaces, a beautiful fountain, an exchange, theatres, etc. Velvets, silk stuffs, woolen goods, soap, brandy, and liquors are manufactured; and there is considerable trade in corn, oil, wool, wine, and cattle. Pop. (1901) 61,385.

P., anc. *Perusia*, was one of the 12 Etrurian republics. It became tributary to Rome B.C. 294. During the war between Mark Antony and Augustus, it was taken by the latter, and was burned down. It was captured by the Goths under Totila at the fall of the Western Empire. Under Pope Paul III., it was united to the Papal States. In 1860 it became part of the kingdom of Italy under Victor Emanuel.

PERU'GIA, LAKE OF: see TRASIMENUS LACUS.

PERUGIA, *pā-rô'jâ*, known also as UMBRIA, *ũm'brĩ-â*: province in central Italy; 3,720 sq. m. The surrounding provinces are Arezzo, Pesaro ed Urbino, Ancona, Macerata, Ascoli-Piceno, Aquila, Rome, and Siena. The Apennine range passes through the n. and e., and there are numerous spurs in other portions. The Tiber flows through the province, and there are numerous valleys and plains which are very productive. Much of the wood and lumber used in Rome is obtained from P. Large numbers of cattle and sheep

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are kept, and bees and poultry receive much attention. Fruit-growing is a prominent industry, and considerable corn is produced. There are manufactures of woolen, cotton, and silk. The province is divided into districts; cap. Perugia. The famous battle between the Romans and Hannibal was fought probably in this province.—Pop. (1891) 595,579; (1901) 667,210.

PERUGINO, *pā-rô-jē'no*, PIETRO (real name PIETRO VANNUCCI, *pē-ā'tro vâ-nôt'chē*): 1446-1524: celebrated Italian painter: b. Citta della Pieve, in Umbria; but having afterward established himself in the neighboring and more important city Perugia, where he had the right of citizenship, he is commonly called Il Perugino. It is generally thought that he studied under Andrea Verrocchio at Florence. He executed numerous excellent works in various cities, particularly in Florence, Siena, Pavia, Naples, Bologna, Rome, and Perugia. Sixtus IV. employed him in the Cappella Sistina; and his fresco of *Christ Giving the Keys to Peter* is by far the best of those painted on the side-walls of that chapel. He, with contemporary painters, decorated the Stanze of the Vatican; and his works there are the only frescoes that were spared when Raphael was commissioned to substitute his works for those formerly painted on the walls and ceilings. The fact of his having had Raphael for his pupil has no doubt in one way increased the reputation of P., but it has also in some degree tended to lessen it, as, in many of P.'s best productions, the work of Raphael is confidently pointed out by connoisseurs, and, indeed, many important pictures, at one time acknowledged as his, are now ascribed to his great pupil. His high standing as a painter, however, is established by many admirable works, in which no hand superior to his own could have operated; and, with the exception, perhaps, of Francia, who in some respects is esteemed his equal, he is now acknowledged as the ablest of the masters of that section of the early Italian school in which religious feeling is expressed with great tenderness, in pictures remarkable for delicate execution. P.'s works are distinguished also by rich and warm coloring. An excellent example of this master's work is in the collection of the National Gallery, London—'No. 288. *The Virgin Adoring the Infant Christ*. P.'s reputation was high, when the introduction of the cinquecento style, by Leonardo and Michelangelo, tended to throw into the shade the art of the earlier masters. Disputes ran high between the leaders of the old and new styles, and Michelangelo is said to have spoken contemptuously of P.'s powers. This, of course, has biassed Vasari's opinion in his estimate of the opponent of his idol, but P.'s reputation now stands very high, and his works are greatly esteemed. Raphael was about 12 years of age when he was entered as a pupil with P., who was then (1495) engaged on the frescoes in the Sala del Cambio (the Exchange) at Perugia. P died at Castello di Fontignano, near Perugia.

## PERUKE—PERUWELS.

**PERUKE**, n. *pěr-ôk'* [F. *perruque*—from It. *perruca*; Sp. *peluca*, a wig (see **PERIWIG**)]: a wig. **PERUKED'**, a. *-ôkt'*, covered or fitted with a wig. **PERUKE-MAKER**, a wig-maker. *Note.*—The connection is formed between the It. and Sp. by remembering that *r* and *l* are interchangeable. The primary meaning was probably 'a mass of hair separated from the head'—see **Skeat**.

**PERULA**, n. *pěr'û-lă*, or **PERULE**, n. *pěr'ûl*, **PER'ULÆ**, n. plu. *-lê* [L. *perula*, a little pocket—from L. and Gr. *pêra*, a bag or wallet]: in *bot.*, a sac formed in some orchids by the prolonged and united bases of two of the segments of their perianth; the cap-like covering of buds formed by the abortion of their outer leaves.

**PERUSE**, v. *pê-rôz'* [the origin of this word is uncertain, but it may be connected with L. *pervîsus*, looked through, examined—from *per*, through; L. *vîsum*—from *video*, I see: F. *viser*, to look at, to view]: to read with attention; to read through; in *OE.*, to observe; to examine; to survey. **PERU'SING**, imp. **PERUSED**, pp. *pê-rôzd'*. **PERU'SER**, n. *-zér*, one who reads with attention, as a book. **PERU'SAL**, n. *-ô'zăl*, the act of reading; the careful examination, as of a book. *Note.*—**Skeat** may be right when he affirms that **PERUSE** is coined from *per* and *use*, and that the primary sense was 'to use carefully,' and then acquiring the curious change to the senses, 'to survey, to read.'

**PERUVIAN**, a. *pê-rô'-* or *pěr-ô'vî-ăn*: of or pertaining to *Peru*: N. a native of Peru. **PERUVIAN BALSAM**, or **BALSAM OF PERU**, thick brown glutinous liquid of fragrant odor and pungent bitter taste, product of a leguminous tree growing in limited parts of S. America; introduced into Europe about 1527, as a remedy in bronchial and pulmonary diseases, and for wounds and ulcers. **PERUVIAN GOOSEBERRY** (see **PHYSALIS**). **PERUVINE**, n. *pê-rô'-* or *pěr-ô'vîn*, a light oily fluid obtained from the balsam of Peru.

**PERUVIAN BARK**: bark of various cinchona trees (see **CINCHONA**). These trees were introduced by the E. India Co. into Brit. India 1861, being planted chiefly on the Neilgherry Hills, partly on the mountains of Ceylon and the Himalaya: from these stations they have been diffused throughout the Madras presidency. Several years since there were about 2,700,000 cinchona-trees on the govt. plantations. Markham, agent of the E. India Co. in this introduction, in all his travels saw only one Peruvian Bark tree which had been planted by the hand of man. (See Markham's *Travels in Peru and India*, 1862.)

**PERUWELS**, *păr'rü-vêls*: town of Belgium, province of Hainault, with breweries, lime-kilns, and some linen manufactures. Pop. 8,000.

PERUZZI—PERVERT.

PERUZZI, *pā-rôt'sē*, BALDASSARE DA SIENA: architect and painter: 1481-1536; b. Ancajano, Italy. He studied architecture and painting at Rome. He became famous as designer of the Farnesina, a villa erected on the Tiber for a wealthy Roman banker, who became his liberal patron. This structure is noted for beauty of design and for its frescoes by Raphael, P., and other famous artists. The noted frescoes in San Onofrio, attributed sometimes to a contemporary, were painted by P. Pope Leo X. appointed him architect of St. Peter's 1520; but seven years later, when Rome was invaded, he lost his property and was taken prisoner. Escaping to Siena, he was appointed architect of the city, and designed its defenses. He afterward returned to Rome and designed several palaces, but lived in poverty, and is supposed to have been poisoned by a competitor. He was buried in the Pantheon. He probably invented the form of architectural perspective painting which was improved by Del Pozzo; was a good classical scholar and an able scientific engineer. One of his drawings, the *Adoration of the Magi*, in which the three kings are represented by portraits of Michelangelo, Raphael, and Titian, is in the English National Gallery.

PERVADE, v. *pér-vād'* [L. *pervādērē*, to spread through, to penetrate—from *per*, through; *vādo*, I go]: to pass or spread through the whole extent of a thing; to be diffused through every minute part. PERVAÐ'ING, imp. PERVAÐ'ED, pp. PERVA'SIVE, a. -*vā'siv* [L. *pervāsus*, passed or spread through]: tending or able to pervade. PERVA'SION, n. -*zhūn*, the act of pervading or passing through.

PERVERSE, a. *pér-vérs'* [F. *pervers*—from L. *perversus*, overturned, overthrown—from *per*, thoroughly; *verto*, I turn: It. *perverso*]: stubborn; untractable; continuing in wrong-doing; petulant; vexatious. PERVERSE'LY, ad. -*lī*. PERVERSE'NESS, n. -*nēs*, or PERVER'SITY, n. -*sī-tī* [F. *perversité*—from L.]: the state of being perverse; disposition to thwart or cross. PERVER'SION, n. -*shūn* [F.—L.]: the act of perverting; change to something worse; diversion from the true intent or object. PERVER'SIVE, a. -*siv*, tending to corrupt or pervert.—SYN. of 'perverse': froward; ungovernable; untoward; peevish; cross; distorted; obstinate.

PERVERT, v. *pér-vért'* [F. *pervertir*; L. *pervertērē*, to overturn, to overthrow—from *per*, thoroughly; *verto*, I turn: It. *pervertere*]: to corrupt; to turn from the true use, end, or purpose: N. *pér'vért*, one who has changed to the worse—generally said of one who is believed to have changed from the true religion to a false one, or to a corrupt form of the true. PERVERT'ING, imp. PERVERT'ED, pp. PERVERT'ER, n. -*ér*, one who corrupts. PERVERT'IBLE, a. -*ī-bl*, capable of being perverted.—SYN. of 'pervert, v.': to distort; misinterpret; convert; proselytize;—of 'pervert, n.': convert; proselyte; neophyte.



## PERVIOUS—PESCHIERA.

**PERVIOUS**, a. *pér'vī-ūs* [L. *pervius*, having a passage through—from *per*, through; *via*, a way]: that may be penetrated by another body or substance; admitting passage; penetrable by the mind. **PERVIOUSLY**, ad. *-lī*. **PERVIOUSNESS**, n. *-nēs*, the quality of admitting a passage through.

**PESADE**, n. *pē-sād'* or *-zād'* [F. *pesade*, motion of a horse in riding; *peser*, to weigh—from L. *pensare*]: the motion of a horse raising his fore quarters without moving his hind feet.

**PESARO**, *pā'sā-rō* (anc. *Pisaurum*): town of central Italy, province of Pesaro and Urbino, on a rocky wooded hill, on the right bank of the Foglia, 1 m. from the mouth of that river in the Adriatic; 20 m. n.e. of Urbino. Its streets are broad, and it is surrounded by walls and defended by a citadel. It is a bishop's seat, and contains a cathedral and other churches. The country in the vicinity is fruitful and beautiful; the figs of the district being esteemed the best in Italy. The port cannot now accommodate vessels of more than 70 tons burden; but is large enough for 200 vessels of light draught. Silks, pottery, glass, and leather are manufactured; and there is active trade in silk, hemp, and woolen goods. Pop. (1901) 25,103.

**PESARO-ED-URBINO**, *pā'sā-rō-ēd-ōr-bē'nō*: province of Italy, s. of the Adriatic, n. of Perugia, with Forli and Tuscany on the w., and Ancona and the Adriatic on the e.; about 1,150 sq. m. The surface is broken by mountain ranges, but the valleys are fertile and are well cultivated. Flax, hemp, and various kinds of grain, are grown; and large quantities of grapes and olives are produced. Some of the finest silk of Europe is obtained from this province. Many bees are kept, and on the fine hill-pastures large numbers of cattle and sheep are maintained. Cap. Pesaro.—Pop. of province (1872) 213,072; (1890) 232,438; (1901) 253,982.

**PESCADORES (ISLANDS)**: see **FORMOSA**.

**PESCHIERA**, *pēs-kē-ā'rā*: frontier town and fortress of the kingdom of Italy, and a member of the famous Quadrilateral (q.v.); partly on an island in the channel of the Mincio, partly on the right bank of that river, at its outlet from the Lake of Garda. The town itself is a poor place of less than 2,000 inhabitants. P. commands the right bank of the river, and in connection with it is the extensive work called the 'Salvi,' which covers the approaches of the river in that direction. During the French republican war, P. was a simple pentagon. Its fortifications, however, were greatly strengthened by the Austrians. It is defended by walls and by forts, lunettes, fosses, and a covered-way; and its main purpose, besides that of forming an intrenched camp capable of accommodating a large number of troops, is to harass an army attempting to cross the Mincio by Goito or Valeggio. In the island portion of the town are extensive barracks, forming three sides of a square. P. is a

## PESHAWAR.

station on the Milan and Venice railway, and is a station also of the Austrian govt. steamers that ply on the Lake of Garda. P. was taken by the Piedmontese under King Charles Albert 1848, and was again invested by them 1859, June, after the battle of Solferino. The treaty of Villafranca, however, 1859, July 11, relieved P. from a siege.

PESHAWAR, or PESHAWUR, *pěsh-ow'ér* or *pě-shaw'-wér*: important town, near the n.w. 'scientific' frontier of India; cap. of the province of P.; 18 m. e. of the e. extremity of Khyber Pass, 150 m. e.s.e. of Cabul. It is defended by a bastioned wall, and commanded by a fort, the fear of which prevents internal disturbances. At the beginning of the 19th c., P. had 100,000 pop. Under the stern rule of the Sikhs, its trade languished, and its splendid mosques, many of them in the richest style of oriental architecture, fell into decay. It is on the route from Hindustan to Cabul and Khorassan by the Khyber Pass, and is the seat of a British garrison, maintained here to preserve the security of the route. Under British protection, the town has revived, trade has become more active, and the appearance of the suburbs and environs is improved. Pop. (1891) 83,930; (1901) 95,147.

The *district* of P., included in the Punjab, and formerly a portion of Afghanistan, has 1,929 sq. m. It is exceedingly fruitful. Pop. 523,152.—The *division* of P., which includes the dist. of P. and two others, has 8,381 sq. m.; pop. 1,181,289; (1891) 1,421,210.

## PESIITO—PESSARY.

**PESIITO**, rather **PESIIT'**to, *pě-shě'tō* [Syr. 'simple,' 'plain,' sc. Version]: cursive variety of the old Phœnician alphabet. The term is used as the designation of the earliest and the authorized Syriac Version of the Old, and the greatest part of the New, Test. This version holds among Syrian Christians the same place as the Vulgate in the Roman, and the 'Authorized Version' in the English Church. Many are the traditions about its origin. Thus, the translation of the Old Test. is supposed to date from the time of Solomon and Hiram; or to have been done by Asa the priest; or to date from the time of the Apostle Thaddæus (Adæus), and Abgar, King of Osrohene, in the 1st c. after Christ. To the same period is supposed to belong also the translation of the New Test., which is ascribed to Achæus, disciple of Thaddæus, the first Edessian bishop and martyr. Recent investigation has come no nearer to any result than to place the latter translation vaguely in the 2d, and the former in the 3d c., and to make Judaic Christians authors of both. Ephraem Syrus (q.v.), who wrote in the 4th c., certainly speaks of the P. as *Our Version*, and finds it even then necessary to explain some of its terms, which had become obsolete. Five books of the New Test. (the Apocalypse and four of the Epistles) are lacking in all the MSS., having probably not yet formed part of the canon when the translation was made. The version of the Old Test. was made direct from the Hebrew, and by men imbued with the Palestinian mode of explanation. It is extremely faithful, and astonishingly free from any of those paraphrastic tendencies which pervade more or less all the Targums or Aramaic versions. Its renderings are mostly very felicitous, and coincide in many places with those of the Septuagint; which fact has given rise to the erroneous supposition that the Septuagint itself had been drawn upon. Its use for the Old Test. is more of an exegetical, for the New Testament more of a critical, nature. An edition of the P. worthy of its name is still as much a desideratum as is a critical edition of the Septuagint or the Targums; consequently investigators have as yet reached only hazy conclusions respecting some very important questions connected with it. The *editio princeps* of the New Test. part dates Vienna 1555; that of the Old Test. is contained in the Paris Polyglot of 1645. Several portions of the P. have been translated again into Arabic. The Syriac translation of those parts of the New Test. which are not found in the P., but are now incorporated into the Syriac Bibles, are of late and uncertain date.

**PESO**, n. *pā'sō* [Sp.]: a dollar—term used in the Spanish states of S. America.

**PESSARY**, n. *pēs'sār-ī* [It. *pessario*: F. *pessaire*—from L. *pessus*]: a small instrument made of gutta-percha or waxed linen, introduced into the vagina for supporting the mouth of the uterus.

## PESSIMISM.

PESSIMISM, n. *pěs'si-mizm* [F. *pessimisme*—from L. *pessimus*, worst]: doctrine that the world is the worst possible world; doctrine that the universe by its inherent law tends toward the non-existence whence it sprang: disposition to look on the worst side of everything; opposite of *optimism*. PES'SIMIST, *-mĭst*, one who holds the theories, or exercises the disposition, of pessimism.—*Pessimism* is popularly a melancholy or severely critical view of the world and its affairs; philosophically, the doctrine that this world is the worst possible, or altogether evil. It is the antithesis of OPTIMISM [L. *optimus*, best], which is an unthinking genial view of life, or an unquestioning dismissal of its problems with the assumption that 'whatever is, is right;' or else, more doctrinally and more reasonably, the conclusion that Infinite wisdom and goodness underlie all the perplexities of existence. Between the two positive extremes is a vague provisional medium, MELIORISM [L. *melior*, better] (named by 'George Eliot'), a hopeful belief that, though the struggle of existence has thus far been full of suffering and waste, there is a tendency to something better. P. has been brought out as a philosophical system, since 1819, in the works of Schopenhauer and Von Hartmann; but the problem of evil, natural and moral, has given a tinge of P. to ancient writings and systems, appearing, e.g., in the discussions in the Book of Job, in the record by Solomon of his apostasy as given in the Book of Ecclesiastes; and, egoistically, in the motto of epicureanism, 'Let us eat and drink, for to-morrow we die.' Extremes meet; and asceticism in all its forms, in all ages, only draws an opposite inference from the same premises: life is vanity, therefore let us abstain from enjoyments. Brahminism and its offshoot, Buddhism, alike regard the changeful world as one only of sorrow, and existence as vain and evil. Buddhism finds the cause of evil to be in desire, which, together with all thought, may be annihilated by repression and self-mortification, until a practical death in life is attained, the Nirvána, which is perfected at bodily death. Unlike this, the asceticism that grew out of the reasonable self-denial inculcated by Christianity, and its antagonism to worldliness, had in view the blessedness of loving and obeying God, and the purification of the human spirit for a higher life. And while Christianity admits that 'the whole creation travaileth together until now,' it is waiting for a glorious redemption. The philosophical P. of Schopenhauer was connected with German philosophies that sought the primary principle of being, and made it attain to consciousness only in man. This he affirmed to be *Will*, instead of reason or thought; but, in a peculiar sense, a craving toward life and objective existence, without aim. This developed the brain, as one among other things that feed desire; but brain develops at last a rational intelligence that emancipates man from the craving and suffering which sum up nature. We find a

## PEST—PESTALOZZI

momentary rest in the non-utilitarian and hence unselfish enjoyment of art ideals. The only permanent beatitude begins when one gives up the *will to life* in its lower sense—that is, in the order of nature, where no true happiness is possible; and renouncing egoism, even the very principle of individuality, identifies himself with the good and the suffering of every creature, cultivates active love to others, and, above all, keeps the vow of chastity. This is the religion adopted by Tolstoi, with a Christian acknowledgment and coloring; and, except in its atheistic premises, its denial of individual immortality, and a self-denial running to extreme asceticism, it has a Christian likeness. It is the higher rational and spiritual life, *versus* the lower life of subjection to sense, where no happiness is; it even ignores happiness as the true aim of life. Schopenhauer excited little attention before about 1865; meanwhile another form of P. had its day—the cynicism or the plaintive sentimentality of the romantic school. Later, the first effect of Darwinism was unfavorable to theism; indeed, without a theistic interpretation, the ‘struggle of existence’ and the animal side of man offer nothing but a pessimistic view. In 1869 appeared Eduard von Hartmann’s *Philosophy of the Unconscious*. He may be classified as an optimist-pessimist, holding that the world is the best *possible*, but miserable at best; and that the unconscious intelligence and will in nature, when it becomes sufficiently accumulated in man, will decree the world out of existence. All pessimistic theories have their only real foundation in the contrast between the natural and the spiritual, and in the manifest fact that life has a higher meaning and end than happiness in the usual sense of self-gratification. The question, Is life worth living? can find no sure and final answer in weighing the joys of the present existence against its miseries.—See J. Sully’s *Pessimism: a History and a Criticism* (1877), written from the naturalistic point of view; Tulloch’s *Modern Theories in Philos. and Religion* (1884); Schopenhauer’s *Die Welt als Wille und Vorstellung* (1819); Von Hartmann’s *Philosophie des Unbewussten* (1869); *Is Life Worth Living?* by William H. Mallock (1879).

PEST, n. *pĕst* [F. *peste*, a plague, a pest—from L. *pestis*, a deadly disease: It. *peste*]: any pestilential disease; a plague; anything destructive or very mischievous; banè. PEST HOUSE, an infirmary or hospital for pestilential diseases.

PESTALOZZI, *pĕs-tâ-lôt'sĕ*, JOHANN HEINRICH: 1745, Jan. 12—1827; b. Zürich; of a family belonging to the middle-class gentry. He was destined for the Christian ministry, but turned aside first to the study of law; but the perusal of Rousseau’s *Émile*, and the unsatisfactory political condition in which he found Europe, united to disgust him with the artificial life of cities, and he removed to the country, to engage in farming. Purchasing some waste land (after he had acquired the necessary

## PESTER.

experience), he applied himself successfully to its cultivation, marrying about the same time the daughter of a wealthy merchant. His mind continuing to be disturbed by the unhappy condition of the masses of the people, he applied himself, during the intervals of his work, to consider means for their elevation, and became convinced that sound education was the remedy for the many evils which infested society. To give effect to his theories, he converted his own house into an orphan asylum, and endeavored, by judicious blending of industrial, intellectual, and moral training, to afford a specimen of sound education, so contrived as to be practicable as a national scheme. His benevolent enterprises involved him, after 15 years (1775-90), in bankruptcy. The failure of his plans, and the democratic tendency of his opinions, brought on him much contempt and opposition. His only consolation was having saved from degradation and neglect more than 100 children, and having issued several volumes on education, containing the results of his experience, and his hopes for the future of the masses. Many subsequent attempts to found schools and to give a specimen of rational scholastic training were made by P., with varying educational success, but with invariable pecuniary embarrassment. His writings, meanwhile, increased in number and importance. The great idea which lay at the basis of his method of intellectual instruction was, that nothing should be treated of except in a concrete way. *Objects themselves* became in his hands the subject of lessons tending to the development of the observing and reasoning powers—not lessons about objects. In arithmetic, he began with the concrete, and proceeded to the abstract; and into the teaching of writing, he was the first to introduce graduation. His special attention, however, was directed to the moral and religious *training* of children, as distinct from their mere *instruction*; and here, too, a graduated progress and a regard to the nature and susceptibilities of children were conspicuous features of his system. Almost all P.'s methods are now substantially adopted by the instructors of elementary teachers in the normal schools of Europe and the United States; and to no man perhaps has primary instruction been so largely indebted. He died at Brugg, in the canton of Basel, amid mortifications and disappointments.

PESTER, v. *pēs'tēr* [OF. *empestrer*, to pester, to entangle; F. *empêtrer*: perhaps connected with It. *impastricciare*, to bedaub, to beplaster—the figure being that of clogging or entangling in something pasty or sticky]: to trouble; to annoy; to harass with little vexations; in *OE.*, to encumber. PES'TERING, imp. PES'TERED, pp. *-têrd*, troubled vexatiously; in *OE.*, encumbered. PES'TERER, n. *-êr*, he or that which pesters. *Note.*—Brachet's ingenious derivation of the F. *empêtrer* from L. *pastorium*, a clog for horses, is probably correct, the proper signification of *empêtrer* being 'to hobble a horse while he feeds afield.'

## PESTH.

PESTH, *pěst*: most thickly settled co. of Hungary, and second in size; in central Hungary, with the Danube on the w. and the Theiss on the e.; 4,196 sq. m. Except a tract near the Danube, the surface is mostly level and the soil somewhat sandy. In the mountainous region grapes are largely cultivated; in other portions the live-stock interest predominates. The pop. comprises Magyars, Slovaks, Germans, and Jews. A number of islands in the Danube belong to P. Budapest, Kecskemet, Körös, and Waitzen are the principal towns.—Pop. of P. 775,030.

PESTH, *pěst*: most populous and important commercial city of Hungary, on the left bank of the Danube, opposite Buda (q.v.), 171 m. e.s.e. of Vienna by railway. It occupies a low and level site, and contrasts strongly with the antique, picturesque, and rock-built Buda, on the other side of the river. The two cities are connected by a magnificent suspension-bridge, erected 1849, and spanning a water-way of about 1,500 ft. The official name of the united cities is, since 1872, compounded in the form *Budapest*. Along the P. side of the river runs a wide quay, paved and terraced, and backed by a handsome row of buildings, 1½ m. long. The city comprises five divisions—the Inner, Leopold, Theresa, Joseph, and Francis towns. The Inner town, on the bank of the Danube, is the oldest; the other divisions surround it in a semicircle. P. is the seat of the chief judicial courts of Hungary. Its univ., founded at Tyrnau, was transferred to Buda 1780, and thence was removed hither 1784. It is richly endowed, and is attended by more than 2,000 students; the professors and other teachers number 140. Attached to it are a museum, a botanic garden, an observatory, and a library of more than 100,000 vols., with 1,600 MSS. besides. A handsome new chemical laboratory was opened 1872; and in the same year a decree was passed that a new military acad. should be opened, of which the teaching staff numbers 24. Of the chief buildings and institutions, the principal are the synagogue, a large and beautiful structure, completed 1857; the New Buildings (*Neugebäude*)—an immense edifice, now used as barracks and as an artillery depot; the gymnasium; military school; acad. of arts; national museum, with a library of 200,000 vols., and valuable collections of coins, medals, and antiquities; veterinary school; the national and other theatres; and the Hungarian Scientific Soc. The town contains several important silk-spinning factories; and the principal articles of manufacture are silk, cotton, leather, jewelry, and musical instruments. Distilling of brandy, and grinding of grain into meal and flour, are among the most important industries. Four great fairs annually draw here a concourse of more than 30,000 strangers; and exchanges, in value more than 32,000,000 florins, are made. P. was made one of the caps. of the empire and seats of imperial residence 1892, June 8. After Vienna, P. has the greatest trade of any city on the Danube. Pop. of Budapest (1900) 732,322.

## PESTIFEROUS—PESTILENCE.

P. is mentioned for the first time in the 12th c.; but though one of the oldest towns in Hungary, its importance dates only from the reigns of Maria Theresa and Joseph II. It was desolated by the Mongols in the 13th c.; and after the battle of Mohacs (q.v.), it fell into the hands of the Turks, who held it till 1686. At the beginning of the 18th c., it was an inconsiderable town, and has risen into importance only in the last 150 years. It has suffered much from inundations of the Danube, by one of which (1838) 2,280 houses were destroyed. 1849, May, while Görgei, with an army of 40,000 Hungarians, occupied the heights above Buda, and bombarded the fortress, which was held for the imperial govt. by Gen. Hentzi, the latter general retaliated by bombarding P.; but on the night of May 20, the Hungarians stormed and took the fortress; and on the following morning raised above its battlements the standard of revolt. On the field of Rákos, in the vicinity, where the great national assemblies of the Magyars used to be held, horse-races, on the English model, now take place annually.

**PESTIFEROUS**, a. *pēs-tīf'ēr-ūs* [L. *pestis*, a deadly disease; *fero*, I carry]: bearing or bringing pestilence, moral or physical; malignant; destructive. **PESTIF'EROUSLY**, ad. *-lī*.

**PESTILENCE**, n. *pēs'tī-lēns* [F. *pestilence*—from L. *pestilen'tia*, an infectious or contagious disease—from *pestis*, a deadly disease: It. *pestilenzia*]: any contagious and malignant or mortal disease; the plague (see below): anything sweepingly destructive. **PES'TILENT**, a. *-lēt* [F.—L.]: destructive to health and life; noxious to morals or society; corrupt; as applied to persons, troublesome; mischievous. **PES'TILENTLY**, ad. *-lī*. **PES'TILEN'TIAL**, a. *-lēn'shāl*, tending to produce a pestilence or an infectious disease; destructive; pernicious, physically or morally; offensively troublesome.

**PES'TILENCE**: malignant and widely destructive disease. The terms Plague and Pestilence, corresponding to the Gr. *Loimos* and the L. *Pestis*, have, until recent times, been used indiscriminately to denote any epidemic diseases affecting large masses of a community, and were remarkable for fatality, e.g., the oriental plague, the sweating sickness, cholera, certain virulent forms of fever, etc. 'Thus,' says Dr. Craigie, in *The Practice of Physic* (I. 349), 'the term *Loimos* was applied by the Greeks to designate a species of epidemic remittent fever; and the plague of Athens described by Thucydides is manifestly an epidemic form of the same disease, which has been at all times in the summer season endemial on the coasts and islands of the Mediterranean and Archipelago. The instances of *Loimos*, so frequently mentioned by Dionysius of Halicarnassus, and of *Pestis*, so often mentioned by Livy and other Roman historians in the early history of Rome, are manifestly the remittent or remittent-continuous fever, which has been at all times the native product of that district,



## PESTLE—PESTO.

and which acquired, after inundations of the Tiber, or a certain train of weather, the characters of a very generally diffused, a very malignant, and a very mortal distemper. Numerous instances of a similar inaccurate mode of expression occur in designating the remittent fevers of the middle ages and of modern times; and we find, even in the early history of the colonization of the W. Indian Islands and the United States, frequent examples of the term plague being applied to the remittent fever of these regions, and especially to epidemic attacks of yellow fever.' During the middle ages, the term *Pestis* was applied to numerous disorders, such as syphilis, small-pox, erysipelas, epidemic sore throat, petechial fever, the sweating sickness, gangrenous pneumonia, ergotism, etc. See BLACK DEATH: PLAGUE.

Several Hebrew words are translated *pestilence* or *plague* in the authorized version of the Old Testament. Such of these pestilences as were sent as special judgments are outside the range of inquiry; others have the characteristics of modern epidemics, so far as their action was not unnaturally rapid, and they were general in their attacks. Sufficient data are not in our possession to enable us to identify with certainty any of these epidemics. It has been supposed by some critics that in some of these cases (e.g., in Deut. xxviii. 27; Amos iv. 10; and Zech. xiv. 18; and in the case of Hezekiah) the oriental plague is referred to; but Poole (Smith's *Dictionary of the Bible*, II. 883) is of opinion that there is not any distinct notice of this disease in the Bible.

PESTLE, n. *pěs'l* or *pěs'tl* [OF. *pestel*; L. *pistillum*, the pestle of a mortar—from *pinso*, I grind; Gr. *ptissō*: It. *pestello*]: that with which anything is pounded in a mortar: V. to pulverize; to pound and work up in a mortar. PES'TILLA'TION, n. *-ā'shūn*, the act of pounding in a mortar.

PES'TO: see PÆSTUM.

## PET—PETALUMA.

**PET**, n. *pět* [Sw. *pytt*; Dan. *pyt*; Norw. *pet*, pshaw! tut! exclamations of displeasure: Magyar, *pittyni*, to blurt with the mouth: Gael. *peat*, a tame animal]: a fit of slight passion or sulks; a fit of peevishness; any animal fondled or indulged; a word of endearment applied to young children [in this sense probably connected with F. *petit*, a little one]: V. to indulge in pets or fits of ill-humor, as a child; to fondle or indulge. **PET'TING**, imp. **PET'TED**, pp.: **ADJ.** spoiled by indulgence; indulged in fits of ill-humor. **PETTISH**, a. *pět'tish*, pertaining to a pet; fretful; peevish; capricious. **PET'TISHLY**, ad. *-lī*. **PET'TISHNESS**, n. *-nēs*, petulance; peevishness. **IN A PET**, in the sulks. **A PET CHILD**, an indulged child. **TO TAKE THE PET**, to be ill-satisfied with; to act like a spoiled child; to sulk. *Note.*—That 'pet, ill-humor,' and 'pet, a fondling,' have a common origin, will not appear inconsistent, when it is considered that 'to pet a child' is 'to indulge it in its pets or fits of ill-humor.' There is an obvious connection with F. *petit*, a little one, but the meanings cannot now be separated.

**PET**, n. *pět* [F. *petit*, a little one (see **PET** 1)]: a fondling; a dear little one; a tame and fondled animal.

**PETAL**, n. *pět'al* [F. *pétale*—from Gr. *pet'alon*, a leaf—from *petannumi*, I spread out: It. *petalo*]: in *bot.*, the leaf of an expanded flower; one of the separate parts of a corolla or flower (see **COROLLA**). **PET'ALLED**, or **PET'ALIED**, a. *-āld*, or **PETAL-SHAPED**, a. having the shape of a petal. **PETALIFORM**, a. *pě-tāl'ī-fawrm* [L. *forma*, a shape]: having the form of a petal. **PET'ALINE**, a. *-īn*, pertaining to a petal. **PET'ALOUS**, a. *-ūs*, resembling a petal. **PET'ALISM**, n. *-īzm*, in *anc. Syracuse*, a form of banishment by writing the name of the person to be banished on a leaf. **PET'ALITE**, n. *-īt* [Gr. *lithos*, a stone]: a mineral, consisting mainly of silicates of alumina and lithia, of a white, grayish, or greenish color, and of a lamellar structure in one direction. **PETALODY**, n. *pět-āl'ō-dī* [Gr. *eidos*, resemblance]: a state in which sepals become colored like petals; the conversion of stamens or other organs into petals. **PETALOID**, a. *pět'al-oyd* [Gr. *eidos*, resemblance]: having the appearance or color of a petal; shaped like the petal of a flower.

**PETALUMA**, *pět-a-lō'ma*: city in Sonoma co., Cal., on the San Francisco and North Pacific railroad, and on Petaluma creek; 42 m. n. by w. from San Francisco, with which it has steamboat connection. There are several churches and schools; one daily and two weekly newspapers; an incorporated banking company (cap. \$200,000), a national bank (cap. \$200,000), and two state banks (combined capital \$400,000). There are carriage-shops, flour-mills, and manufactures of woolen and other goods. The surrounding agricultural region is very fertile, and much fruit is produced. Grapes are largely cultivated, and wine is made in considerable quantities. Pop. (1880) 3,326; (1890) 3,692; (1900) 3,871.

## PETARD—PETCHARY.

PETARD, n. *pě-târd'* [F. *pétard*, a petard—from *péter*, to break wind, to crack—from *pet*, an explosion: comp. L. *peditum*, a breaking wind: It. and Sp. *petardo*]: short piece of ordnance of bell-shape, formerly used for bursting open gates, destroying bridges, etc., by explosion—now supplanted by the more effective gunpowder or dynamite. It consisted of a half-cone of thick iron filled with powder and ball; this is firmly fastened to a plank, and the latter is provided with hooks, to allow of its being attached securely to a gate, etc. The engineers attached the P., lighted the slow-match by which it was to be fired, and fled. When the explosion took effect, a supporting column charged through the breach, while the defenders were yet in consternation. Large petards contained as much as 13 lbs. of powder. PETARDEER, or PETARDIER, n. *pět'âr-dēr'*, one who had the charge of a petard. HE IS HOIST ON HIS OWN PETARD, phrase used of one who is injured or destroyed by the very mine or trap which he had prepared for another; he is beaten with his own weapons.

PETASUS, n. *pět'ă-sūs* [L. *petäsus*; Gr. *petäsos*, a travelling hat or cap—from *petannumi*, I spread out]: the winged cap of Mercury: common felt hat—adopted from Greece by the Romans; worn by horsemen and ephēbi; in shape resembling an umbellated flower reversed, having a low crown and broad brim: in *arch.*, a cupola having the form of a broad-brimmed hat.

PETCHARY, *pěch'a-rĭ*: popular name of a number of species of the genus *Tyrannus*, sometimes ranked with the Shrikes (*Laniadæ*), sometimes with the Fly-catchers (*Muscicapidæ*). The name seems derived from the cry of the GRAY P. (*T. Dominicensis*), a bird very common in the warm parts of America and in some islands of the W. Indies, gregarious and migratory, spending the spring and summer in the islands, and retiring to the hottest parts of the mainland from the end of Sep. to the beginning of Jan. Its cry is a kind of shriek, consisting of three or four shrill notes, incessantly repeated. The entire length of the Gray P. is about 9½ inches. It is a very strong bird, and in defense of its young will maintain the battle against any hawk. It feeds partly on insects, sometimes on humming-birds, and partly on berries. When fat, it is much esteemed for the table, and great numbers are shot on this account.—The COMMON P. (*T. caudifasciatus*) is one of the most common birds of the W. Indies. At certain seasons of the year, when very fat, it is in great request for the table. This bird has been observed to play with a large beetle, as a cat does with a mouse, letting it drop, and catching it before it can reach the ground. It is a very bold bird, and does not hesitate to attack a dog passing near its nest.



**Petard.**—*a*, The petard; *b*, Spot to which slow match was applied; *c*, Madrier; *d*, Hook by which the whole was suspended against the obstacle to be removed.

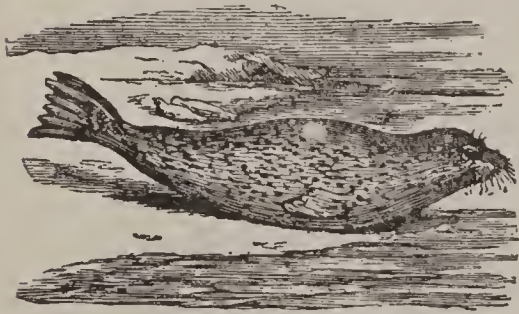
Stormy Petrel (*Thalassidroma pelagica*).



**Petronel.**



Golden Pheasant (*Phasianus pictus*).



**Phoca Vitulina.**



**Pheon.**



Silver Pheasant (*Phasianus nyctemerus*).



**Petasus.**



**Pheon.**

## PETCHORA—PETER.

PETCHORA, *pět-chō'râ*: large river in n. European Russia, rising on the w. slope of the Ural Mountains, flowing n. through the e. parts of the govts. of Vologda and Archangel, to about 66° 25' n., then s.e. about 150 m., and finally sweeping toward the n., and expanding into an estuary 30 m. wide and full of islands, passing into the Arctic Ocean, after a course of 940 m. It is said to be navigable for large river-boats more than 700 m. The estuary, open from the middle of June till the middle of Sep., has a depth of 20 to 30 ft. The country through which this river flows is quite uncultivated; dense forests extend on both sides, and the character of the scenery is wild and sombre. The forests abound in larch-wood, now largely used in the construction of iron-clad vessels. Within recent years, a colony has settled at the mouth of the P., for the purpose of felling, dressing, and exporting timber. See Seeböhm's *Siberia in Europe* (1881).

PETECHLÆ, n. plu. *pě-těk'ĩ-ě* [It. *petecchiale*]: spots of dusky crimson or purple color, quite flat, with a well-defined margin, and unaffected by pressure; in appearance closely resembling flea-bites. These spots result from a minute extravasation of blood beneath the cuticle. They occur most frequently on the back, at the bend of the elbow, and in the groin. They indicate an altered state of the blood, and are often symptoms of very serious diseases, e.g., typhus fever, plague, scurvy, etc. They occur likewise in very severe cases of small-pox, measles, and scarlet fever, when their presence is indicative of extreme danger. PETECHIAL, a. *pě-těk'ĩ-äl*, spotted; characterized by the appearance of petechiæ.

PETER (DON PEDRO) THE CRUEL, King of Castile and Leon: 1333, Aug. 30—1369, Mar. 23 (reigned 1350-69); b. Burgos; son of Alfonso XI. and Maria of Portugal. On his father's death, P. succeeded to the throne without opposition, but left the whole exercise of power to his mother, Donna Maria, and Albuquerque, his father's prime minister and chancellor. But by the instigation of his mistress (afterward his queen), Marie de Padilla, P. emancipated himself 1353 from the guidance of the queen-mother and her coadjutor Albuquerque, taking the reins of government into his own hands. His rule, being much more impartial than that of the regency, obtained exceeding popularity, which was increased by his affable manner toward the mass of his subjects; but the strict justice with which he decided all causes between the rich and poor, the clergy and the laity, combined with a haughty and imperious carriage toward them, alienated from him the nobles and clergy. The plottings of Albuquerque, who had fled to Portugal, having culminated 1354 in an outbreak in the province of Estremadura, P. marched against the rebels, but was betrayed by his brother, Henry of Trastamare, and taken prisoner 1354, Dec. Popular opinion then declared loudly in his favor; and having escaped from prison, he found himself speedily at the head of a pow-

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erful army, with which, despite the excommunication of the pope, he speedily reduced his opponents to submission. But this episode in his career had a disastrous influence on his character for the rest of his life. Betrayed by his relatives, and even by his mother, he became suspicious of every one; and having experienced to the full the power of his enemies, he scrupled not as to the weapons to be employed against them. The rest of his reign was devoted to the destruction of the power of the great vassals, the establishment of his own authority on the ruins of their feudal tyranny, and long-continued and bloody wars with the kingdoms of Aragon and Granada. Henry, who had fled to France, seizing a favorable opportunity, returned 1366 at the head of a body of exiles, backed by Bertrand du Guesclin (q.v.) with an army of mercenaries, and aided by Aragon, France, and the pope. P., however, by promising to England the seaboard of Biscay, with the provinces of Guipuzcoa and Logroño, and supplying a contribution of 56,000 florins, prevailed on Edward the Black Prince to espouse his cause. Edward invaded Castile in the spring of 1367, totally defeated Henry and Du Guesclin at Navarette (April), taking the latter prisoner (releasing him almost immediately), and speedily restoring P. to the throne. But the king disgusted his chivalrous ally by his cruelty to the vanquished, and Edward repassed the Pyrenees, and left the monarch to his fate. Rebellions broke out everywhere; and 1367, in autumn, Henry returned. P.'s scanty and ill-disciplined forces were routed at Montiel, 1369, Mar. 14, he was treacherously decoyed and captured by Du Guesclin and was killed by some of Henry's followers.

PETER I., KING OF SERVIA (PETER KARAGEORGEVITCH), was b. about 1846; son of Prince Alexander Karageorgevitch, grandson of Kara George, Serbia's deliverer, and cousin of King Alexander I. At the age of 12 he went into exile with his family. He was educated in France, graduated at the military staff college, and served in the Franco-Prussian war as an officer of the foreign legion, being decorated for gallantry. In 1883 he married Princess Zorka of Montenegro, who died in 1890. In 1903, June 10, a military revolution broke out in Belgrade. King Alexander was assassinated and Prince Peter was proclaimed King. He was crowned June 25.

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PETER I., ALEXEIVICH, Czar of Russia, generally denominated PETER THE GREAT: 1672, June 11—1725, Jan. 28 (reigned 1682—1725; in full power 1689—1725); b. Moscow; son of Czar Alexei Mikailovich by his second wife, Natalia Naryskine. His father, Alexei, died 1676, leaving the throne to his eldest son, Feodor, P.'s half-brother. This prince, however, died 1682 without issue, after naming P. as his successor, to the exclusion of his own full-brother, Ivan. This exclusion immediately provoked an insurrection, fomented by the children of the czar Alexei's first marriage, most prominent among whom was the grand-duchess Sophia, a woman of great ability and energy, but of unbounded ambition. Disdaining the seclusion customary among the women of the royal family, she showed herself to the *Strelitz* (q.v.), excited them to fury by an ingenious story of the assassination of her brother Ivan, and then let them loose on the supporters of P.'s claims. After a carnage of three days, during which more than 60 members of the most noble families of Russia were massacred, she succeeded in obtaining the coronation, 1682, July, of Ivan and P. as joint rulers, and her own appointment as regent. Until P.'s coronation, his education had been greatly neglected, but after this time he became acquainted with Lieut. Franz Timmermann, native of Strasbourg, who gave him lessons in the military art and in mathematics; after which he had the good fortune to fall under the guidance of Lefort (q.v.), a Genoese, who initiated him into the sciences and arts of civilization; and by showing him how much Muscovy was in these respects behind the rest of Europe, influenced his whole future career. Lefort also formed a small military company out of the young men of noble family who attended P.; and caused P. himself to pass, by regular steps, from the lowest (that of drummer) to the highest grade in it, rendering him all the while amenable to strict discipline. This course of training, doubtless, saved P. from becoming the mere savage despot which his brutal and passionate disposition, and indomitable energy, inclined him to be; it also protected him from the jealousy of his half-sister, the regent Sophia, who, seeing him absorbed in military exercises and other studies, imagined that he had wholly given himself up to amusement. She, however, soon discovered her mistake; for P., contrary to her wishes, but by his mother's advice, married, 1689, Feb., Eudoxia Feodorowna, of the family of Lapoukin; and in Oct. of the same year demanded of his sister to resign the government. In the ensuing contest, P. was at first worsted, and compelled to flee for his life; but he was speedily joined by the foreigners in the Russian service, with a Scotchman named Patrick Gordon (q.v.) and the Swiss Lefort at their head; and the *Strelitz*, who had been his antagonist's mainstay, flocking to his standard, she resigned the contest, and was shut up in a convent, whence till her death, 1704, she did not cease to annoy him by her

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intrigues. 1689, Oct. 11, P. made his public entry into Moscow, where he was met by Ivan, to whom he gave the nominal supremacy and precedence, reserving the sole exercise of power for himself. Ivan held his puppet sovereignty only till 1696. Though P. was all his life under the dominion of ungovernable passions and sensual habits, yet during great part of his reign he was so exclusively engaged in projecting and carrying out his schemes for the regeneration of Russia, that his gross animal nature had little opportunity of displaying itself.

His first care, on assuming the government, was to form an army disciplined according to European tactics, in which labor he was greatly aided by the valuable instructions of Gordon and Lefort, both of whom were military men, and had served in some of the best-disciplined armies of western Europe. He also labored to create a navy, both armed and mercantile; but at this period Russia presented few facilities for such an attempt, for she was shut out from the Baltic by Sweden and Poland—the former possessing Finland, St. Petersburg (then called Ingria), and the Baltic provinces; and from the Black Sea by Turkey, which, extending along the whole of the n. coast, had reduced that sea to the rank of an inland lake; leaving only the White Sea and the Arctic Ocean, with the solitary port of Archangel, available for the Russian navy. P., thinking the possession of a portion of the Black Sea would best supply the required facilities of accessible scaboard and port, declared war against Turkey, and took (1696) the city of Azov, at the mouth of the Don, after a long siege, which the ineffective condition of his newly disciplined army compelled him to convert into a blockade. Skilled engineers, architects, and artillerymen were then invited from Austria, Venice, Prussia, and Holland; ships were constructed; the army was further improved both in arms and discipline; and many of the young nobility ordered to travel in foreign countries, chiefly in Holland and Italy, for acquiring such information as might be useful in the modernization and civilization of their country. They were ordered to take special notice of all matters in connection with ship-building and naval equipments. Others were sent to Germany to study the military art. Not quite satisfied with this arrangement, P. was eager to see for himself the countries for which civilization had done so much, and which had so highly developed the military art, science, trade, and industrial pursuits; so after repressing a revolt of the Strelitz, 1697, Feb., and dispersing them among the various provinces, he intrusted the reins of govt. to Prince Romonodofski, assisted by a council of three, and left Russia 1697, Apr., in the train of an embassy of which Lefort was the head. In the guise of an inferior official of the embassy, he visited the three Baltic Provinces, Prussia, and Hanover, reaching Amsterdam, where, and subsequently at Saardam, he worked for some time as a com-





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mon shipwright. His curiosity was excessive; he demanded explanations of everything which he did not understand; and to his practice of ship-building and kindred trades, he added the study of astronomy, natural philosophy, geography, and even anatomy and surgery. On receipt of an invitation from William III., King of England, he visited that country, and for three months, partly in London and partly at Deptford, labored to amass all sorts of useful information. While in England he received the honorary degree D.C.L. from the Univ. of Oxford. He left England 1698, Apr., carrying with him English engineers, artificers, surgeons, artisans, artillerymen, etc., to the number of 500; and next visited Vienna, to inspect the emperor of Austria's army, then the best in Europe. He was about to visit Venice also, when the news of a formidable rebellion of the Strelitz recalled him to Russia, which he reached by way of Poland, arriving at Moscow 1698, Sep. 4. Gen. Gordon had already crushed the revolt; but these turbulent soldiers had so enraged P. by their frequent outbreaks, that he ordered them all to be executed, even occasionally assisting in person on the scaffold. A few, however, were pardoned, and sent to settle at Astrakhan. The Czarina Eudoxia, who was suspected of complicity in the conspiracy, which had been the work of the old Russian or anti-reform party, was divorced, and shut up in a convent; the czar's own sister, Martha, was likewise compelled to take the veil. To show his gratitude to his faithful adherents, P. conferred on the chief of them the order of St. Andrew, then instituted. He put the press on a proper footing, caused translations of the most celebrated works of foreign authors to be made and published, and established naval and other schools. At this period, the ordinary arithmetic was first introduced for the management of accounts, these having been previously kept by means of balls strung on a wire (the Tartar method). P. also introduced the mode of raising revenue by taxation of commodities in common use. Trade with foreign countries, formerly punished as a capital crime, was now permitted, or rather, in the case of the principal merchants, insisted upon. Many improvements in dress, manners, and etiquette were introduced authoritatively among the public functionaries, and recommended to the people at large. Even the organization of the national church could not escape P.'s reforming zeal.

In 1700, P., desirous of gaining possession of Carelia and Ingria, provinces of Sweden, which had formerly belonged to Russia, entered into an alliance with the kings of Poland and Denmark to make a combined attack on Sweden, taking advantage of the tender age of its monarch, Charles XII.; but he was shamefully defeated at Narva, his raw troops being wholly unable to cope with the Swedish veterans. P. was not in the least disheartened, for, taking advantage of the Swedes being employed elsewhere, he quietly appropriated a portion

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of Ingria, in which he laid the foundation of the new capital, St. Petersburg, 1703, May 27. Great inducements were held out to those who would reside in it, and in a few years it became the Russian commercial depot for the Baltic. In the long contest with Sweden, the Russians were almost always defeated; but P. rather rejoiced at this, as he saw that these reverses were administering to his troops a more lasting and effective discipline than he could have hoped to give them in any other way. He had his revenge at last, in totally routing the Swedish king at Poltava (q.v.), 1709, July 8, and in seizing the whole of the Baltic Provinces and a portion of Finland in the following year. His success against Sweden helped much to consolidate his empire, and to render his subjects more favorably disposed toward the new order of things. After reorganizing his army, he prepared for strife with the Turks, who, at the instigation of Charles XII. (then residing at Bender), had declared war against him: see OTTOMAN EMPIRE. In this contest, P. was reduced to such straits that he despaired of escape, and, looking forward to death or captivity, wrote a letter to his chief nobles, cautioning them against obeying any orders that he might give them while a captive, and advising them regarding a successor to the throne in case of his death. But the finesse and ability of his mistress, Catharine, afterward his wife and successor (see CATHARINE I.), extricated him from his difficulties; and a treaty was concluded 1711, July 23, by which P. lost only his previous conquest—the port of Azov and the territory belonging to it. Shut out from the Black Sea, the possession of a good seaboard on the Baltic became more necessary to him, and the war against Sweden in Pomerania was accordingly pushed with utmost vigor. 1712, Mar. 2, his marriage with his mistress, Catharine, was celebrated at St. Petersburg; and two months afterward, the offices of the central govt. were transferred to the new capital. His arms in Pomerania and Finland met with success, and 1713 the latter province was completely subdued. P. neglected nothing to develop the naval power of the empire, and the strictness with which he enforced the discharge of their duties on his ministers and officers appears from the refusal, by the court of admiralty, of the czar's own application for the grade of vice-admiral, until by defeating the Swedish fleet at Hangoend, and taking the Aland Isles and several coast-forts in Finland, he had merited the honor. In the end of 1716 and beginning of 1717, in company with the czarina, he made another tour of Europe, this time visiting Paris, where he was received with great honors, and returned to Russia 1717, Oct., carrying with him books, paintings, statues, etc., to a large amount. It was soon after this that he ordered his son Alexei (q.v.) to be put to death, and many of the nobles who had been implicated in Alexei's treasonable plans were punished with savage barbarity. In 1721 peace was made with Sweden, and on condition of

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that power giving up the Baltic Provinces, Ingria (now govt. of St. Petersburg), Viborg, and Kexholm, and a small portion of Finland, with all the islands along the coast from Courland to Viborg, Sweden received back the rest of Finland, with a sum of about \$2,000,000. In 1722 P. began a war with Persia, to open the Caspian Sea to Russian commerce (see PERSIA). The internal troubles of Persia compelled the shah to yield to the demands of his formidable opponent, and to transfer to him the three Caspian provinces, with the towns of Derbend and Baku. On P.'s return to his capital, he inquired into the conduct of his finance ministers, and punished with fines, imprisonment, and even death, those whom he detected in fraudulent acts. To save the empire which he had established and constituted from being abandoned to the weak government of a minor, he, 1722, Feb., promulgated his celebrated law of succession (see PETER II). For the last years of his life he was engaged chiefly in beautifying and improving his new capital, and carrying out plans for more general diffusion of knowledge and education among his subjects. In the autumn of 1724 he was seized with serious illness, the result of his imprudence and later habitual excesses; and after great suffering, he died. See the Life by E. Schuyler.

PETER II., ALEXEIVICH, Czar of Russia: 1715, Oct. 23—1730, Jan. 29 (reigned 1727—30); b. St. Petersburg; sole male representative of Peter the Great, being son of the unfortunate Alexei (see PETER I.) by his wife, Princess Charlotte of Brunswick-Wolfenbüttel. On the death of the Czarina Catharine I., P. ascended the throne, 1727, May 17, in accordance with a decree of Peter the Great, which enjoined that each czar should name his successor; and the ambitious Menshikoff, who hoped to govern more easily in the name of a minor, prompted the empress to choose P. In order to secure himself in his high position, Menshikoff affianced one of his daughters to the youthful czar, and compelled his relative, Anna Petrowna and her husband, Duke of Holstein, to retire to their own estates. But, notwithstanding these and other precautions, his power was overturned by a mere child, a playfellow of the boy-ruler, who was of the powerful family of Dolgorouki. Instigated by his friends, this boy, Ivan Dolgorouki, opened the eyes of his sovereign to the humiliating dependence in which he was held by Menshikoff, and inspired him with a strong desire to free himself. The plan succeeded, and the minister and his family were exiled to Siberia, the Dolgorouki family taking their place as favorites. The marriage of a lady of this family with P. had been arranged, and was almost on the point of being celebrated, when the czar was seized with small-pox, and died at St. Petersburg. During his short reign, the three Caspian provinces, Astera-bad, Ghilan, and Mazanderan, which had been seized by Peter the Great, were recovered by Persia.

PETER III., FEODOROVICH, Czar of Russia: 1728, Mar. 4—1762, July 14 (reigned 1762, June 5—July 10); grand-

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son of Peter the Great (being son of his eldest daughter Anna Petrowna, wife of Karl Friedrich, Duke of Holstein-Gottorp); b. Kiel. He was declared 1742, Nov. 18, by Czarina Elizabeth (q. v.), her successor on the throne of Russia. From the time of his being publicly proclaimed heir, he lived at the Russian court; and, in obedience to the wishes of the czarina, married Sophia Augusta, a princess of Anhalt-Zerbst, who, on entering the Greek Church (a necessary condition of marriage of a foreigner with the czar present or presumptive), assumed the name Catharina Alexiowna. P. succeeded Elizabeth on her death 1762, June 5; and his first act of authority was to withdraw from the confederate league of France, Austria, and Russia against Prussia, restoring to Frederick II., the heroic monarch of Prussia, the provinces of Prussia proper, which had been conquered during the Seven Years' War, and sending to his aid a force of 15,000 men; a line of conduct which seems to have been prompted solely by his admiration for the Prussian sovereign. He also recalled many of the political exiles from Siberia, among whom were L'Estocq, Münnich, and the Duke of Courland; abolished the sanguinary law which proscribed any one who should utter a word against the Greek Church, the czar, or the government; and then attempted the realization of his favorite project, which was to recover from Denmark that portion of Slesvig which had been ceded to her 1713, and to avenge the tyranny and annoyances to which his family—that of Holstein-Gottorp—had been subjected. But before the army he had dispatched could reach its destination, a formidable conspiracy, headed by his wife, and supported by the principal nobles, had broken out against him. This conspiracy originated in the general discontent at the czar's conduct and government; for the nobility were offended at his liberal innovations, and the preference that he showed for Germans; the people and clergy, at his indifference to the national religion, and his ill-concealed contempt for Russian manners and customs; while the whole nation murmured at his servility to Frederick II. of Prussia. His wife had still deeper cause for dislike; for though he was himself addicted to drunkenness and debauchery, he never ceased to reproach her with her infidelities; and had even planned to divorce her, disinherit her son Paul (q. v.), and elevate his mistress Elizabeth Woronzof to the conjugal throne. The revolution broke out 1762, on the night of July 8; P. was declared to have forfeited his crown, and his wife Catharine was proclaimed czarina as Catharine II. (q. v.) by the guards, the clergy, and the nobility. P., who was then at Oranienbaum, neglecting the counsels of Field-marshal Münnich, who proposed to march at once on the capital at the head of the regiments which were still faithful, or at least to take secure possession of Cronstadt and the fleet, soon found even the opportunity of flight cut off, and was compelled to submit. He abdicated July 10, and on the 14th was put to death by Orloff (q. v.), to secure the safety of the conspirators.

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**PETER**, or **CEPHAS**, *sē'fas*, named originally **SIMON**, Apostle of Jesus Christ: native of Bethsaida, on the Lake of Gennesaret. His father was called Jonas; and the name by which P. is known in Christian history was given to him by the Lord Jesus, who changed his name of origin (Bar-Jona) into *Cephas*, a Syro-Chaldaic word, which means 'rock' or stone, and for which *Petra*, or, in the masculine form, *Petros*, is the Greek equivalent. He was a fisherman by occupation, and, together with his brother Andrew, was actually engaged in this occupation on the Sea of Galilee when Christ called both to be his disciples, promising to make them 'fishers of men.' For this invitation they had been prepared by the preaching of John the Baptist, and they accepted it without hesitation. For the incidents recorded of P.'s life as a disciple, see the gospel narrative. These incidents all evince chiefly a warm and impulsive character, even down to the hour of weakness in which he denied his Master. It is plain from the gospel narrative that he was regarded by the Lord Jesus with special affection; and the events which followed Christ's ascension accord with this inference from that narrative. He was the first mover of the election of a new apostle to fill the vacancy left by Judas Iscariot; he was spokesman for the others on the day of Pentecost; he it was who answered to the charges when they were brought before the council; he was chief actor in the tragic scene of the death of Ananias and Sapphira; he was the first to break down the wall of the prejudice of race by receiving a Gentile convert into the church; he was the first to propound in the Council of Jerusalem the question to be discussed as to the obligation of the Mosaic observances. The last incident of P.'s life supplied by the Scripture narrative is his presence in the Council of Jerusalem, A.D. 49. Of his subsequent career, our only knowledge is derived from tradition. His special mission was to the Hebrew race, as Paul's was to the Gentile; and he is supposed to have preached through Pontus, Galatia, Cappadocia, Asia, and Bithynia, chiefly to those of his own nation dispersed in these countries, all which are named in the address of the first of the two Epistles which he has left (see **PETER, THE EPISTLES GENERAL OF**). Another tradition which, until the 16th c., met general acceptance, reports that he preached at Rome, that he took up his residence there as bishop, and that there he suffered martyrdom. This tradition is a foundation of the Roman claim to supremacy in the church. It early encountered the opposition of the reformers; its first antagonist being a writer named Velerius, whose work was published 1520, and who was followed by Flacius, Salmasius, and, above all, Spanheim. This opposing view has found supporters in Baur and the Tübingen school; but the main current of scholarship, Prot. as well as Rom. Cath.—from Scaliger, Casaubon, Usher, Pearson, Cave, etc., to Neander, Gieseler, Bertholdt, Olshausen in Germany, and others in Britain—has ac-

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cepted the Roman tradition. Recently among Prot. scholars in England and the United States, the assent is less ready; and it is claimed that the evidence adduced for this tradition is not of a nature and amount adequate to make it the basis of important doctrines of the Christian faith. The evidence on both sides seems nearly evenly balanced. The time of P.'s going to Rome also has been the subject of much discussion. By some, he is alleged not to have gone to Rome till the year 63, or, at all events, a short time before his martyrdom; others date his first visit as early as 42 or 43, without, however, supposing his residence after this date to have been continuous. In his first Epistle, it is implied that at the time of writing it he was at Babylon; and the name Babylon is by many critics held to be employed as a mystic designation of Rome, in accordance with a practice not unusual with the Hebrews and other orientals; but there is nothing to fix conclusively the date of this Epistle. He is held by Rom. Cath. writers to have fixed his see at Antioch before proceeding to Rome; but of this supposed event, also, the date is uncertain. His martyrdom is fixed, with much probability, in 66, and is supposed to have been at the same time and place with that of the apostle Paul. P. was sentenced to be crucified, and, according to the tradition (preserved by Eusebius from Origen), asked that he might be crucified with his head downward, in order that his death might exceed in ignominy that of his Divine Master.

PETER, THE EPISTLES GENERAL OF: two Epistles in the canon of the New Test.; called *general*, because they are addressed not to particular churches or persons, like those of the apostle Paul; but (as in the case of the 1st Epistle) to all the Christians scattered throughout Asia Minor, or (as in the case of the 2d) to the entire body of Christians without exception. The objects of the *First Epistle* are to strengthen believers under trials; to exhort them to the earnest performance of all duties—personal, social, and domestic; and to demonstrate how thoroughly that performance depends on a spiritual recognition of Christ and his work. There is a strong eschatological tendency in the Epistle; the apostle seems to grow more intensely serious, under the conviction that 'the end of all things is at hand' (iv. 7). That the Epistle is the composition of Peter is very generally admitted. The external evidence is singularly strong; while the internal, derived from a consideration of style, sentiment, and doctrine, is equally so. We see in every sentence the ardent, impassioned, practical, unspeculative character of Peter, who held with a fine Hebraic vehemence of faith the great facts and principles of Christianity, but could not, like the more subtle and logical Paul, give them a systematic representation. Many critics have warmly praised the beauty and strength of the language.—The *Second Epistle*, whose correspondence to the Epistle of Jude is very noticeable, stands in a very different position from the first. So far as external



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authority is concerned, it has scarcely any. The most critical and competent of the Fathers were suspicious of its authenticity; it was rarely, if ever, quoted, and was not formally admitted into the canon till the Council of Hippo, 393. The internal evidence is not regarded as abundant. The great difference of style between it and the first Epistle is universally admitted. Bunsen, Ullmann, and Lange hold indeed that chap. ii. is an interpolation, but consider i. and iii. genuine. Many critics regard the Epistle as a fabrication, and judge that its contents show it to have been meant as a Christian attack on the Gnosticism of the 2d c. [See the remarks on II Peter in Neander's *Geschichte der Pflanzung und Leitung der Kirche durch die Apostel.*] The principal arguments adduced for its apostolic character are—1, that its rejection would endanger the authority of the canon; 2, that it is inexplicable how the church should have received it if it had not regarded Peter as the author.

PETER THE HERMIT: first mover of the great mediæval CRUSADES (q.v.): about 1050–1115, July 7; b. Amiens, France, of good family. Having been educated at Paris and in Italy, he became a soldier, served in Flanders without much distinction, retired from the army, married, and had several children. On the death of his wife, he became a monk, and ultimately a hermit. In a pilgrimage to the Holy Land about 1093, he was moved by seeing the Holy Sepulchre in the hands of the Infidel, and by the oppressed condition of the Christian residents or pilgrims; and on his return spoke so earnestly to Pope Urban II., that that pontiff adopted his views, and commissioned him to preach throughout the West an armed confederation of Christians for the deliverance of the Holy City. (Hagemeyer in his monograph *Peter der Eremita*, 1880, denies that P. was ever in Palestine till he went with the crusaders, and asserts that the scheme of a crusade originated with the pope, not with the hermit.) Though P. was mean in figure, his enthusiasm lent him power. From province to province, from city to city, he wandered. 'He rode,' writes Milman, 'on a mule, with a crucifix in his hand, his head and feet bare; his dress was a long robe, girt with a cord, and a hermit's cloak of the coarsest stuff. He preached in the pulpits, on the roads, in the market-places. His eloquence was that which stirs the heart of the people, for it came from his own—brief, figurative, full of bold apostrophes; it was mingled with his own tears, with his own groans; he beat his breast: the contagion spread throughout his audience. His preaching appealed to every passion—to valor and shame, to indignation and pity, to the pride of the warrior, to the compassion of the man, to the religion of the Christian, to the love of the brethren, to the hatred of the unbeliever aggravated by his insulting tyranny, to reverence for the Redeemer and the saints, to the desire of expiating sin, to the hope of eternal life.' The results are well known, as among those marvels of moral enthusiasm of which

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history presents occasional examples. All France, especially, was stirred from its depths; and just at the time when the enthusiasm of that country had been already kindled to its full fervor, it received sacredness and authority from the decree of a council at Clermont, in which Urban himself was present, and in which his celebrated harangue was the signal for the outpouring, through all western Christendom, of the same chivalrous emotions by which France had been borne away under the rude eloquence of the Hermit. For the details of the expedition, see CRUSADES: our present concern is with P.'s personal history. Of the enormous but undisciplined army which assembled from all parts of Europe, one portion was committed to his conduct; the other being under the command of a far more skilful leader, Walter the Pennyless. P. placed himself at their head, mounted on his ass, with his coarse woolen mantle and his rude sandals. On the march through Hungary, they became involved in hostilities with the Hungarians, and suffered a severe defeat at Semlin, whence they proceeded with much difficulty to Constantinople. There Emperor Alexis, filled with dismay at the want of discipline which they showed, was but too happy to give them supplies for their onward march; and near Nice, they encountered the army of the Sultan Solyman, from whom they suffered a terrible defeat. P. accompanied the subsequent expedition under Godfrey; but worn out by the delays and difficulties of the siege of Antioch, he was about to withdraw from the expedition, and was retained in it only by the influence of the other leaders, who foresaw the worst results from his departure. Accordingly, he had a share, though not marked by any signal distinction, in the siege and capture of the Holy City 1099; and the closing incident of his history as a crusader was an address to the victorious army delivered on the Mount of Olives. He returned to Europe, and founded at Huy a monastery, in which he died.

PETERBOROUGH, *pě'tér-bür-üh*: episcopal city and parliamentary borough, chiefly in Northamptonshire, partly in Huntingdonshire, England; on the left bank of the Nene—which is thus far navigable for boats; 37 m. n.e. of Northampton, 76 m. n.n.w. of London by railway. The Great Northern, the Eastern Counties', the Northampton and Peterborough, and the Midland Counties' railways pass the city, and have stations here. P. is regularly laid out, has an excellent grammar school with an endowment, a corn exchange in the Italian style, a jail and house of correction, a handsome parish church, and a number of chapels and meeting-houses, schools, and charitable institutions. The city had its origin in a great Benedictine monastery, founded 655 by Oswy, King of Northumbria, and by Peada, son of Penda, King of Mercia. This monastery, which became one of the wealthiest and most important in England, was reared in honor of St. Peter; but it was not until after being destroyed by the Danes 807, and rebuilt

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about 966, that the town was called Peterborough. In 1541 the church—the third that has occupied the site—was made a cathedral. See Poole's *Peterborough* (1881).

The great edifice of P. is this famous cathedral, which holds probably the highest rank among English cathedrals of the second class, and possesses some special points of interest which give it a place scarcely second to any. It is one of the three Norman cathedrals of England. The choir and e. aisles of the transept (built 1118-33) are early Norman; the transept (1155-77) is middle Norman; the nave (1177-93) is late Norman; the w. transept (of the same period) is transition Norman; the w. front, which, as a portico (using that term in its classical sense), is said to be the grandest and finest in Europe, is early English; and the e. aisle (begun 1438, not completed till 1528) is perpendicular. The beautiful and unique western front consists of three arches 81 ft. in height, supported by triangular piers detached from the w. wall. Each arch is surmounted by a beautiful pediment and cross. The front is flanked on each side with turrets 156 ft. high, and crowned with pinnacles. The roof of the nave is painted in lozenge-shaped divisions, containing figures of kings, bishops, grotesques, etc., in colors. A central tower, lantern-shaped, rises at the intersection of the nave and transept. In the north-choir aisle, a slab of blue stone still covers the remains of Catharine of Aragon. On the stone is carved the simple inscription, 'Queen Catharine, A.D. 1536.' In 1587, July, the remains of Mary, Queen of Scots, were brought here from Fotheringay for interment, and here they rested until, 25 years later, they were removed to Westminster Abbey. The entire length of the cathedral is 476 ft. 5 inches; breadth of nave and aisles, 78 ft.; height of the ceiling of the church, 78 ft.; breadth of the church at the great transepts, 203 ft.; height of lantern, 135 ft.; length of w. front, 156 ft.; height of central tower from the ground, 150 ft. The great square tower was taken down and rebuilt 1883-85.

P. has active trade in corn, coal, timber, lime, bricks, and stone. Two newspapers are published weekly. As the junction of so many railway lines, its trade and general prosperity have had rapid recent increase. Pop. (1871) 17,434; (1881) 22,394; (1891) 25,172.

PETERBOROUGH, *pĕ'tĕr-bŭr-ŭh*: town, cap. of P. co., Ontario, Canada; on the Canadian Pacific and the Midland division of the Grand Trunk railroad, and the Otonabee river; 67 m. n. from Toronto. The town is well laid out, the streets are lighted with gas, and there is a good water-power. Steamers ascend the river to this point, and transport large quantities of lumber, grain, and flour. There are foundries, saw-mills, and grist-mills, and manufactures of leather, woolen goods, and agricultural implements. There are 3 monthly, 3 weekly, and 3 daily newspapers; and 4 banks. Pop., (1891) 9,717; (1901) 11,239.

PETERBOROUGH, LORD: see MORDAUNT.

## PETER CLAVER—PETERHEAD.

PETER CLAVER, *klâ-vär'*: missionary to African slaves: 1582–1654, Sep. 8; b. Catalonia, Spain. When 20 years of age, he became a member of the Soc. of Jesus, and 1610, at his earnest request, was assigned to duty among the slaves, which in large numbers were being brought into the country. He was located at Cartagena, at which port the slave-trade then centred; received ordination as a priest, and gave himself with wonderful zeal to imparting religious instruction to the slaves, and improving their physical condition. To facilitate his work, he publicly proclaimed himself 'the slave of the negroes forever.' He spent his life on board the slave-ships and in hospitals, ministering to the bodily and spiritual needs of the blacks, and suffering extreme privations. He was pronounced a hero by Benedict XIV. and beatified by Pius IX. His life has been written in French and in Spanish.

PETERHEAD, *pē-tēr-hěd'*: seaport and municipal and parliamentary burgh, in the dist. of Buchan, Aberdeenshire; on a peninsula, the eastmost point of land in Scotland; 44 m. n.e. of Aberdeen by railway. It is irregularly built, clean, and paved largely with the reddish granite, named after the town, and used for polishing. The Earls Marischal, before their attainder 1715, owned much of the parish, and were superiors of the town of P. The property was bought by the Merchant Maiden Hospital of Edinburgh, the governors of which have greatly improved the town and port. P. has two libraries. There are cloth and winey manufactures, and considerable ship-building. The chief exports are herrings, cod-fish, butter, grain, and granite; and imports, lime, wool, and general merchandise. P. was long the chief British depot of seal and whale fishing, but this interest has declined. In 1880 there entered the port 1,073 ships of 91,687 tons burden; and there were owned 716 fishing-boats, manned by 4,296 persons, and 171,896 barrels of herrings were cured, besides large quantities of cod and other fish. P. has a harbor on the n., another on the s., side of the isthmus of the peninsula on which it is built, and they are connected by a passage cut across the isthmus, allowing vessels to leave the harbor in different winds. On the s. side of the Bay of P., and about 2½ m. from the town, are the Buchanness and its light-house, and Boddam Castle ruins. The Ugie enters the sea a mile n.w. of P.; and on its banks, 3 or 4 m. n.w. of the town, are the ruined castles of Inverugie and Ravenscraig. The walls of the former are still standing, and access is obtained to the roof by a winding staircase in one of the towers, giving a magnificent view of the valley of the Ugie. Ravenscraig, on a rock on the opposite side of the river, is considered a good specimen of the ancient Scottish baronial style, in the square form common in the beginning of the 13th c.: its walls are so strong as to have been deemed impregnable previous to the use of artillery.—Pop. of P. (1841) 4,762; (1871) 8,535; (1881) 10,992. (1891) 12,198

PETERHOF—PETERS.

**PETERHOF**, *pē'tēr-hōf* or *pā'*:- a palace of the emperor of Russia, on the s. shore of the Gulf of Finland, 15 m. w. of St. Petersburg. The palace was built by Peter the Great 1711, contains a fine collection of paintings, and is surrounded by a beautiful park.—The town P. has pop. 15,000.

**PE'TER-HOUSE**: see **ST. PETER'S COLLEGE** (Cambridge).

**PE'TER LOM'BARD**: see **LOMBARD, PETER**.

**PETERLOO MAS'SACRE**, *pē-tēr-lô'* [fanciful term suggested by Waterloo]: popular name for the dispersal of a large meeting by armed force in St. Peter's Field, Manchester, England, 1819, Aug. 16. The assemblage, chiefly operatives from different parts of Lancashire, was called to consider parliamentary reform. The dispersal took place by order of the magistrates; several troops of horse, including the Manchester yeomanry, being concerned in the affair. Five or six persons were killed, and many wounded. St. Peter's Field is now covered by buildings. (See *History of the Peace*, by Harriet Martineau, ed. of 1858; p. 107.)

**PETERMANN**, *pā'tēr-mân*, **AUGUST**: geographer: 1822, Apr. 18—1878, Sep. 25; b. Bleicherode, Saxony. He was educated at Nordhausen, and at the age of 17 went to the Potsdam Cartographic Institution, where he studied under Dr. Berghaus and greatly assisted him in work on his *Physical Atlas*, and drew the maps for Humboldt's *Asie Centrale*. After remaining in Potsdam six years, he went to Edinburgh where he rendered distinguished service in bringing out the English ed. of A. K. Johnson's *Physical Atlas*. He was in London 1847-54; became a member of the Royal Geog. Soc., and a noted writer on geographical subjects. In 1854 he returned to Germany as manager of the Geographical Institute at Gotha, and founded a magazine for diffusion of geog. knowledge. He made special studies of African and Arctic exploration, and on these subjects became the leading authority in the world. He was the trusted adviser of most of the explorers of his time, and in some cases raised most of the means for carrying on their enterprises. His maps were remarkably clear and accurate. He died at Gotha.

**PETER MARTYR**: see **VERMIGLI, PIETRO MARTIRE**.

**PETERS**, *pē'tērz*, Ger. *pā'terss*, **CHRISTIAN HENRY FREDERICK**, PH.D.: 1813, Sep. 19—1890, July 19; b. Coldenbüttel, Schleswig, Germany: astronomer. He graduated at the Univ. of Berlin 1836; continued his studies in Copenhagen; was engaged in surveying Mount Etna 1838-43; served under Garibaldi in the revolution in Italy, and was made maj. of artillery for bravery on the field of battle; had a price set on his head at the close of the revolution; and, after escaping to Turkey, came to the United States 1853. On letters from Humboldt and other European scientists, and from George P. Marsh, U. S. minister to Turkey, he received an appointment in the U. S. coast survey, and was stationed first at the observ-

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atory in Cambridge, Mass., and afterward at the Dudley Observatory in Albany, N. Y. In 1858 he was called to Hamilton College, Clinton, N. Y., for observatory work; and 1867, when Edwin C. Litchfield endowed the observatory and chair of astronomy with \$30,000, the name of the former was changed to Litchfield Observatory, and P. was appointed its director and prof. of astronomy in the college. He had charge of the party that observed the solar eclipse at Des Moines 1869, and was head of the govt. expedition that observed the transit of Venus in New Zealand 1874. P. discovered 48 asteroids; recorded nearly 14,000 solar spots; proved and registered more than 112,000 zone stars; published 20 *Celestial Charts* 1884, and completed but did not publish a second series of these charts 1888.

PE'TERS (or PE'TER), HUGH: 1599-1660, Oct. 16; b. Fowey, Cornwall, England. He graduated from Trinity College, Cambridge, 1622, took orders, commenced preaching in London as a nonconformist, and thereby incurred the displeasure of Abp. Laud, who sent him to prison. On regaining his liberty, he preached for a number of years to an independent congregation at Rotterdam. With two of his brothers, he came to New England 1635, and the following year succeeded Roger Williams as pastor of the church in Salem, Mass. He became an overseer of Harvard College 1637; and 1638 was requested by the gen. court to aid in a revision of the laws of the colony. With two others, he was sent to England 1641 to obtain a modification of the laws regulating trade between the mother country and the colonies. He joined the army of Cromwell, became a commissioner to revise the laws, held various civil and ecclesiastical positions; but on the restoration of Charles II. was brought to trial and suffered death for high treason. The execution was in the Tower of London. His enemies denounced him as grossly immoral, but his friends maintained that he was a wise and a good man. His writings were peculiar, and attracted considerable attention. Among them were a series of letters with the title of *A Dying Father's Legacy to an Only Child* (1660); *A Word for the Army and Two Words for the Kingdom, to clear the One and cure the Other, Forced in much Plainness and Brevity from their Faithful Servant, Hugh Peters*; and *A Good Work for a Good Magistrate, or a Short Cut to a Great Quiet*.

PE'TERS, RICHARD, LL.D.: 1744, June 22—1828, Aug. 22; b. Philadelphia; son of William P. He graduated from the College of Philadelphia 1761, was admitted to the bar 1763, and was register of the admiralty 1771 till the revolution. He was an ardent patriot, commanded a military company 1775, was sec. of the continental board of war 1776-81, and on his resignation received a vote of thanks from congress for faithful service. He was a member of the continental congress 1782-3, of the state assembly 1787, speaker of the latter body 1788-90, and of the state senate 1791. He declined the office of comptroller of the U. S. treas., was judge of the dist.

## PETER'S—PETERSBURG.

court of Penn. 1792-1828, and for more than 30 years was pres. of the Philadelphia Agricultural Soc. He was an eminent lawyer, wrote many papers on agriculture, and published various court reports. He died at Philadelphia.

PETER'S (SAINT) CHURCH, at Rome: see ST. PETER'S CHURCH.

PETER'S (SAINT) COLLEGE, Cambridge: see ST. PETER'S COLLEGE.

PETERS, SAMUEL ANDREW, LL.D.: 1735, Dec. 12—1826, Apr. 19; b. Hebron, Conn.; distant relative of Hugh P. He graduated from Yale College 1757, travelled in Europe, took orders in the Church of England, and 1762 was placed over the Episc. Church at Hebron. He strongly antagonized the colonies in their troubles with the mother country, and returned to England 1774. He was elected bishop of Vt., but the abp. refused consecration. Returning to America, he obtained a grant of land near the Falls of St. Anthony, which for many years he vainly endeavored to have confirmed by congress; and settled in New York 1818, where he remained in poverty till his death. His original name was Samuel, the Andrew being added by himself after the death of a brother by that name. He received the degree LL.D. from Columbia College 1761. He wrote several works, of which the most notorious was a *General History of Connecticut*, in which he published the apocryphal 'Blue Laws' of the colony, and vented his spite against the people. The work was characterized by Dr. Dwight as 'a mass of folly and falsehood,' and has no historical value.

PETERSBURG, *pě'térz-bérg*: city and port of entry, in Dinwiddie co., Va., on the Richmond and Petersburg, the Norfolk and Western, and the Petersburg railroads, and on the Appomattox river, 12 m. from its mouth, 23 m. s. from Richmond. There are 25 churches; a collegiate institute, good public schools, and several excellent private schools; two daily and five weekly newspapers, one of the latter being an agricultural publication; two public libraries; a theatre; and a national bank (cap. \$100,000), a state bank (cap. \$200,000) and a private bank. Among fine public buildings are the court-house, custom-house and post-office, a state lunatic asylum for colored people, and two market-houses. The city is on rising ground, is well drained, has abundant water from a reservoir, and is well lighted with gas. There is a very fine public park known as Poplar Lawn. The manufacturing interests are varied and extensive. There are flour-mills, cotton-mills, iron-foundries, wooden-ware shops, and tobacco factories—about 60 establishments in all, employing a large number of hands. The river is navigable for vessels of considerable size as far as the falls, which are near the city. A large business is done also by flat-boats, used for 100 m. above the falls. The river furnishes an excellent water-power. Remains of the intrenchments for the defense of the city during the civil war, in which it was the last fortified position held by the Confederacy, may still be

## PETERSBURG.

seen (see PETERSBURG, SIEGE OF). The city is on ground formerly occupied by an Indian village, which was destroyed by white men 1676. In 1733 it was laid out by Col. William Byrd, and was incorporated 15 years later. At two periods in the revolution the British army had its headquarters here. Articles of incorporation were again secured 1781. The intense patriotism of its volunteers in the war of 1812 secured for P. the name 'Cockade City of the South.' Since the civil war, the city has made rapid progress and has become a very important point of shipment for agricultural products of the surrounding region. Its manufactures also have increased. Pop. (1880) 21,656; (1890) 22,680; (1900) 21,810.

PETERSBURG, ST.: see ST. PETERSBURG.

PETERSBURG, SIEGE OF: series of military operations which immediately preceded, and which led to, the close of the civil war. The failure of various attempts to reach Richmond by other routes led Gen. Grant, after the battle of Cold Harbor (see COLD HARBOR), to plan an assault on Petersburg, which had been strongly fortified. He accordingly brought his army across the James river to City Point, 1864, June 12; and three days later an unsuccessful attempt was made by a portion of his troops to take the position. The following day a larger force made an assault, but was repulsed by the Confederates. On June 19th the siege commenced in earnest. With the design of cutting off food supplies to the Confederates from the south, several miles of railroad track were destroyed. In July part of the Union forces crossed the James river, and took a position threatening Richmond, in hope of drawing part of the Confederate army from P. and thus facilitating its reduction. An immense mine, which had been formed under one of the Confederate forts, was fired July 30. It destroyed the fort and formed a crater 200 ft. long and 30 ft. deep. A desperate but unsuccessful assault was made, the Union troops being repulsed with losses far exceeding those of the Confederates. The siege was continued during the fall and winter, and various attacks were made, but nothing of importance was gained. Early the following April, bombardment was resumed. This, with the Union victory at Five Forks, led Gen. Lee to prepare for evacuation of the city. Apr. 3, most of the Confederate force was withdrawn; and, after a sharp contest at one of the forts, the Union army took possession of the place. These movements were followed Apr. 9 by the surrender of the Confederate army at Appomattox.



## PETERSHAM—PETER'S PENCE.

PETERSHAM, n. *pě'tér-shăm* [after Lord *Petersham*, its introducer]: a very thick, shaggy cloth, usually dark blue, used for heavy overcoats; a thick belt-ribbon by which ladies' skirts or bodices may be retained in their place.

PETER'S PENCE, n. *pě'térz pěns*, or PETER-PENCE, n. [after the apostle *Peter*, whose successor the pope of Rome declares himself to be]: annual tribute from households, collected in several of the western kingdoms of Europe and offered to the Roman pontiff, in reverence of the memory of the apostle Peter, claimed by the Rom. Cath. Chh. as the first in the line of popes at Rome. From an early period, the Roman see had been richly endowed; and though its first endowments were chiefly local, yet, as early as the days of Gregory the Great, large estates were held by the Roman bishops in Campania, in Calabria, and even in the island of Sicily. The first idea, however, of an annual tribute appears to have come from England. It is ascribed by some to Ina (721), King of the West Saxons, who went as a pilgrim to Rome, and there founded a hospice for Anglo-Saxon pilgrims, to be maintained by an annual contribution from England; by others, to Offa and Ethelwulf, at least in the sense of their having extended it to the entire Saxon territory. But this is very uncertain; and though the usage was certainly anterior to the Norman conquest, Dr. Lingard is disposed not to place it higher than the time of Alfred. The tribute consisted in the payment of a silver penny by every family possessing land or cattle of the yearly value of 30 pence; and it was collected on Lammass Day, or during the five weeks between St. Peter's and St. Paul's Day and Aug. 1. In the time of King John, the total annual payment was £199 8s., contributed by the several dioceses, in various proportions (see Lingard's *History of England*, II. 330). The tax, called Romescot, with some variation, continued to be paid till the reign of Henry VIII., by whom it was abolished. By Gregory VII., it was sought to establish it for France; and it appears also in Denmark, Sweden, Norway, and Poland. This tribute differs from the payments of the feudatory kingdoms, such as Naples, Aragon, and England under the reign of John.

The pope having suffered considerable diminution of his own revenue since the revolution of 1848, an effort has been made in several parts of Europe and in America to revive this tribute. In some countries, it has been very successful, and the proceeds have been among the chief resources by which the pope has been so long enabled to meet the pressure of pecuniary embarrassments caused by diminished territorial possessions. Since the total annexation of the Papal States to the kingdom of Italy, the tribute has been largely increased in France, Belgium, England, Ireland, and America.

## PETERWARDEIN- PETIOLE.

PETERWARDEIN, *pā'tér-vâr-dîn*: town in the Austrian province of Croatia and Slavonia, one of the strongest fortresses in the Austrian dominions; in a marshy, unhealthy locality on the right bank of the Danube, 50 m. n.w. of Belgrade. The ordinary garrison is a very strong one. The most ancient part of the fortifications, the Upper Fortress, is on a rock of serpentine rising on three sides abruptly from the plain. P., on a narrow peninsula formed by a loop of the Danube, occupies the site of the Roman Acumincum (*acumen*, point), and is said to have been named in honor of Peter the Hermit, who marshalled here the soldiers of the first crusade. In 1688 the fortifications were blown up by the imperialists, and the town was soon after burned to the ground by the Turks; but at the Peace of Passarowitz, 1718, July 21, it remained in the possession of the emperor. Here 1716, Aug. 5, Prince Eugene obtained a great victory over the grand vizier Ali.—Pop. town and suburbs (besides the garrison) 5,000, mostly German.

PETIGRU, *pēt'î-grô*, JAMES LOUIS: 1789, Mar. 10—1863, Mar. 3; b. Abbeville co., S. C., of Huguenot and Irish stock. He graduated from the Univ. of South Carolina 1809, studied law, and began practice 1812; soon settled in Charleston, and became eminent in his profession. He succeeded Hayne as atty.gen. of the state, holding the office 1822-30; became very unpopular by his uncompromising opposition to the nullification doctrines of Calhoun, and was almost the only man of wealth and eminence who remained faithful to the Union. He afterward served as dist.atty. and as a member of the state legislature, opposed the secession movement of 1860, and, though disliked for his political principles, was profoundly respected, and was chosen by the legislature to codify the laws of the state. This great work he completed only a short time before his death. He held the position of the foremost lawyer at the S. C. bar. For some time he was pres. of the S. C. Historical Soc. His *Biography* was published 1866. He died at Charleston.

PETIOLE, n. *pēt'î-ôl* [F. *pétiole*—from L. *petiōlus*, a little foot—from *pes* or *pedem*, a foot]: the foot-stalk of a leaf, connecting the blade with the stem (see LEAVES): among *insects*, the very thin waist between the thorax and abdomen, furnished with two globular enlargements, called nodes. PETIOLED, a. *-ôld*, having a foot-stalk. PETIOLAR, a. *-ô-lér*, or PETIOLARY, a. *-lér-î*, pertaining to or growing on a small stalk; proceeding from a petiole; having a stalk or petiole. PETIOLATE, a. *-lât*, growing on a petiole. PETIOLULE, n. *-lôl*, the stalk of a leaflet in a compound leaf.

## PÉTION DE VILLENEUVE—PETIT.

PÉTION DE VILLENEUVE, *pā-te-ōng' dēh vĕl-nĕv'*, JÉRÔME: noted for his part in the first French Revolution: 1753-94; b. Chartres; son of a procurator there. He was practicing as an advocate in his native city, when he was elected in 1789 a deputy of the *Tiers État* to the States-General. His out-and-out republican principles, and his facile oratory, sonorous rather than eloquent, quickly made him popular, though he had an essentially mediocre understanding, and was altogether windy and verbose. He was a prominent member of the Jacobin Club, and a great ally of Robespierre; the latter was called the 'Incorruptible,' and P. the 'Virtuous.' He was sent with Barnave and Latour-Maubourg to bring back the fugitive royal family from Varennes, and in the execution of this commission he acted in an extremely unfeeling manner. He afterward advocated the deposition of the king, and the appointment of a popularly elected regency; and with Robespierre received, 1791, Sep. 30, the honors of a public triumph. Nov. 18, he was elected *Maire de Paris* in Bailly's stead, the court favoring his election, to prevent that of Lafayette. In this capacity he encouraged the demonstrations of the lowest classes, and the arming of the populace. But as the catastrophe drew near, he awoke to a sense of its terrible nature, and sought in vain to arrest the torrent. On the triumph of the Terrorists, P.'s popularity declined, and he joined the Girondists. On the king's trial, he voted for death, but with delay of execution and appeal to the people, on which he became suspected of being a royalist, and of partaking in the treason of Dumouriez. He was thrown into prison, 1793, June 2, on the fall of the Gironde, but escaped, and joined the other Girondists at Caen. On the defeat of their army by that of the convention, he fled, 1793, July, into Bretagne, and in company with Buzot reached the neighborhood of Bordeaux, which, however, had already submitted. A short time afterward, P.'s and Buzot's corpses were found in a corn-field near St. Emilion, partly devoured by wolves. They were supposed to have died by their own hands. P.'s character has been defended by Madame de Genlis and Madame Roland. It appears that he was extremely virtuous in all his domestic relations; but, on the other hand, his public career shows him to have been weak, shallow, ostentatious, and vain. *Les Œuvres de Pétion*, containing his speeches and some small political treatises, were pub. 1793.

PETIT, n. *pĕt'ī* [F.]: little in figure; small; diminutive; mean: see PETTY. PETITE NATURE, *pĕ-tĕt' nă-tôr'* [F. *nature*, nature]: a term applied to such pictures as contain figures a little less in size than life, and yet have the effect of life size.

## PETITION.

PETITION, n. *pě-tish'ün* [F. *pétition*—from L. *peti-tiōnem*, a request, a petition—from *peto*, I beg or ask: It. *petizione*]: an asking or seeking; a solemn or formal solicitation made by one party to another; a paper or document containing a written request or supplication; a prayer, or a part of one, addressed to God; an earnest entreaty: V. to solicit earnestly; to supplicate. PETITIONING, imp. PETITIONED, pp. *-ünd.* PETITIONER, n. *-ér*, one who petitions. PETITIONARY, a. *-ér-ī*, containing a petition or request. RIGHT OF PETITION, the right pertaining to the citizen of a free country to address the govt. with request for redress of any grievance. The right of the British subject to petition the sovereign or either house of parliament is a fundamental principle of the British constitution, and has been exercised from very early times. The earliest petitions were generally for redress of private wrongs, and the mode of trying them was judicial rather than legislative. Receivers and triers of petitions were appointed, and proclamation was made inviting all persons to resort to the receivers. The receivers, who were clerks or masters in chancery, transmitted the petitions to the triers, who were committees of prelates, peers, and judges, who examined into the alleged wrong, sometimes leaving the matter to the remedy of the ordinary courts, and sometimes transmitting the petition to the chancellor or the judges, or, if the common law afforded no redress, to parliament. Receivers and triers of petitions are still appointed by the house of lords at the opening of every parliament, though their functions have long since been transferred to parliament itself. The earlier petitions were generally addressed to the house of lords; the practice of petitioning the house of commons became frequent first in the reign of Henry IV. Since the revolution of 1688, the practice has been gradually introduced of petitioning parliament, not so much for the redress of specific grievances, as regarding general questions of public policy. In five years (ending 1842) the number of petitions presented to the house of commons was 70,072; in five years (ending 1872) 101,573.

In the United States this right is guaranteed to the citizen by provisions in the constitution. It may have reference to any legislative action and to any discretionary executive action. A petition, if addressed to a person having authority regarding its subject-matter, is by its very nature a privileged document, to which is allowed great freedom in comment on measures and on persons, and whose signers are not held responsible for errors of statement not made in malice. In legislative bodies the fact of presentation of petitions, with the referring of them to the proper committees, is made a part of the journal—a courteous reception improperly refused by congress at one period to petitions for action toward the abolition or the limitation of slavery.—SYN. of 'petition, n.': request; entreaty; supplication; solicitation; suit; a begging; memorial.

## PETITION OF RIGHTS—PETÖFI.

**PETITION OF RIGHTS:** declaration of certain rights and privileges of the British subject obtained from King Charles I. in his third parliament. It was so called because the commons stated their grievances in the form of a petition, refusing to accord the supplies till its prayer was granted. The P. professes to be a mere corroboration and explanation of the ancient constitution of the kingdom; and after reciting various statutes, recognizing the rights contended for, prays 'that no man be compelled to make or yield any gift, loan, benevolence, tax, or such like charge, without common consent by act of parliament; that none be called on to make answer for refusal so to do; that freemen be imprisoned or detained only by the law of the land, or by due process of law, and not by the king's special command, without any charge; that persons be not compelled to receive soldiers and mariners into their houses against the laws and customs of the realm; that commissions for proceeding by martial law be revoked.' The king at first eluded the petition, expressing in general terms his wish that right should be done according to the laws, and that his subjects should have no reason to complain of wrongs or oppressions; but at length, on both houses of parliament insisting on a fuller answer, he gave an unqualified assent 1628, June 26.—In modern usage, P. of R. in Britain denotes a mode of prosecuting a claim against the crown by a subject—said to have originated with Edward I.

**PETITIO PRINCIPII**, *pē-tīsh'ī-ō prīn-sīp'ī-ī* ['a begging of the principle or question']: in logic, that species of vicious reasoning in which the proposition to be proved is assumed in the premises of the syllogism.

**PETÖFI**, *pěh'tö-fě*, **SANDOR (ALEXANDER)**: national modern poet of Hungary: 1823, Jan. 1—(prob.) 1849, July 31; b. at Little Kőrös, county of Pesth. His father, butcher and small landowner in Little Kumania, bore the name Petrovich (son of Peter)—indicating a Slavonic origin; which the poet when he came to manhood exchanged for the Magyar equivalent, Petöfi. P. was sent to the lyceum of the town of Schemnitz, where he neglected his studies, began to write verses, and showed extravagant fondness for theatricals, ultimately running away with a band of German strollers. His father found him and brought him home in quasi-custody. Again sent to school at Oedenburg, he almost immediately ran away, and enlisted as a common soldier; but after about two years in the army, a physician, pitying him, procured his discharge; and he went to Pápá, to complete his education—leaving 1842 to join a troop of comedians. His stage-attempts were utter failures, and he made his way to Presburg, and afterward to Pesth, where he got some employment as translator from the English and the French; thence he went to Debreczin on another venture as an actor, and with failure to the utmost. At last, being invited to contribute to a newspaper at Pesth, he

## PETÖFI.

made his way on foot, nearly 200 m.—wearing shoes padded with straw and carrying in his bosom a MS. vol. of verses; his whole provision for the journey consisting of two florins, which he got from an old school-fellow. On arrival at Pesth he exchanged the name Petrovich for Petöfi. Within a few weeks he had troops of friends and a reputation.

He introduced himself to Vörösmarti, then the most popular poet of Hungary, who received the shabbily dressed stranger coldly; but when he had listened to P.'s verses, expressed his admiration, and from that time treated P. as a son. P. was almost at once received into the Literary National Circle, at whose expense was published his *Versek*, 1844. Other volumes followed with amazing rapidity, and obtained unbounded popularity; so that it was said of P. that 'he never went to bed at night, he never arose in the morning, without hearing his songs from the multitudinous passengers in the public streets.' He sprang almost at a bound into a position in Hungary similar in some respects to that of Burns in Scotland. In 1848 he became, by speech and pen, the advocate of the independence of Hungary. He was for some time a member of the diet, but 1848, Oct., he became a capt. in the Hungarian army; and in the beginning of 1849, he was appointed adjt. and sec. to Gen. Bem. He was in the battle of Segesvár, 1849, July 31, in which Bem's army was defeated with great slaughter; and he was never heard of afterward: it is believed that he was trampled to death in the flight, and that his body, defaced beyond recognition, was buried with the multitude of Magyar dead upon the field. His countrymen long believed that he was not dead, but a prisoner in an Austrian dungeon. Several false Petöfis have made their appearance since his death, and much spurious poetry has been published under his name. Lately, however, his countrymen have subscribed for the erection of a monument to his memory, and have purchased, with a view to its preservation, the house in which he was born at Little Körös. He left a widow—who married again—and one son. His brother, STEPHEN P., has gained some reputation as a poet.

His poems, 1,775 in number, were published in 10 vols. Most of them are lyrics, of which he published several collections, under the titles, *Cypress Leaves on Etelka's Grave*; *Pearls of Love*; *Starless Nights*; *Clouds*. The most celebrated of his narrative poems—also the longest—are *Janos, the Hero*; and *Istok, the Fool*. His earliest work was *The Village Hammer*, 1843; his latest, *The Assessor of the Judgment-seat*, 1849. A vol., containing a poem, *The Apostle*, was suppressed by the Austrian govt. after the pacification of Hungary. P. published a novel, and several vols. of tales, criticisms, and sketches of travel. A selection from his earlier pieces, translated into German, was pub. 1845; and several volumes of translations from his writings have since appeared in Germany. They have been translated also

## PETONG—PETRA.

into French, Flemish, Polish, Danish, and Italian; and an English version, comprising his finest poems, was published 1866 by Sir John Bowring. The quality of his poetry has been as fully recognized among foreigners as among his countrymen: thus, Grimm declared that 'Petöfi will rank among the very greatest poets of all times and tongues;' Henry Heine spoke rapturously of his 'rustic song, sweeter than that of the nightingale;' and Uhland avowed that only old age could prevent his learning Magyar, that he might enjoy P. in his native dress.

PETONG, n. *pě-tǒng'*: the Chinese name of a species of copper of a white color.

PETRA, *pē'trâ* (Heb. SELA, both names signifying 'Rock'): ancient capital of the Nabathæans, in the 'desert of Edom,' in n. Arabia, about 72 m. n.e. of Akabah—a town at the head of the Gulf of Akabah, an arm of the Red Sea. The situation is about 50 m. s. of the s. end of the Dead Sea. P. occupied a narrow rocky valley overhung by mountains, the highest and most celebrated of which is Mount Hor, where Aaron, first Hebrew high-priest, died: it was thus in the very heart of the region made memorable by the 40 years' wanderings of the Israelites. The aboriginal inhabitants were called *Horim* ('dwellers in caves'). It was then conquered by the Edomites or Idumæans (but it never became their capital); and, B.C. 3d or 4th c., it fell into the hands of the Nabathæans, an Arab tribe, who carried on a great transit-trade between the e. and w. parts of the world. It was finally subdued by the Romans A.D. 105, and afterward became the seat of a metropolitan; but was destroyed by the Mohammedans, and for 1,200 years its very site remained unknown to Europeans. In 1812 Burckhardt first entered the valley of ruins, and suggested that they were the remains of ancient Petra. Six years later, it was visited by Irby, Mangles, Banks, and Leigh, and 1828 by Laborde and Linant, and since by numerous travellers and tourists to the East, e.g., Bartlett, Porter, and Dean Stanley. Laborde's drawings give more vivid impression of the ruins of P. than any descriptions, however picturesque. These ruins stand in a small open irregular basin, about half a m. square, through which runs a brook, and are approached best through an extraordinary chasm or gorge about a mile long, called the *Sik*, narrowing as it proceeds, till in some places the width is only 12 ft., while its rocky walls of rich brown or rose-colored sandstone tower to the height of 60 to 120 ft., and, according to Dean Stanley, to 250 ft. Hardly a ray of light can pierce this gloomy gorge, yet it was once the highway to P., and the remains of an ancient pavement can be traced beneath the brilliant oleanders that now cover the pathway. Such a narrow defile was capable of easy defense against invaders. All along the face of the rocky walls are rows of cave-tombs, hewn out of the solid stone, and ornamented with façades.

## PETRARCH.

These are numerous elsewhere also. Originally, they were probably dwellings of the living, not of the dead—a supposition justified by examination of their interior; but when the Nabathæans built the city proper in the little basin of the hills, they were in all likelihood abandoned, and then set apart as the family-sepulchres of those who had formerly been ‘dwellers in the clefts of the rocks.’ The principal ruins are—1. *El-Khuzneh* (‘the Treasure-house’), believed by the natives to contain, buried somewhere in its sacred inclosure, the treasures of Pharaoh. Its rich Roman façade directly faces the mouth of the gorge above described, and was the great temple of the Petræans: it is not built, but hewn out of the rocky hillside. 2. *The Theatre*, a magnificent building, capable of containing 3,000 to 4,000 spectators. At this point the defile begins to widen out into the rocky basin, whose inclosing mountain walls are full of grottoes, with elaborate classical façades. 3. *The Tomb with the Triple Range of Columns*. 4. *The Tomb with Latin Inscription*. 5. *The Deer or Convent*, a huge monolithic temple, hewn out of the side of a cliff, and facing Mount Hor. 6. *The Acropolis*. 7. *Kusr Farôn*, or Pharaoh’s palace, the least dilapidated ruin of Petra. Most of the architecture is Greek, but there are also examples of the influence of Egypt, pyramidal forms being not unknown.

PETRARCH, *pētrârĕk*, FRANCESCO; original name, *Francesco di Petracco*, which he subsequently changed to that (It. PETRARCA, *pā-trâr’kâ*) by which he is now known: first and greatest lyric poet of Italy; 1304, July 20—1374, July 18; b. Arezzo; son of a Florentine notary named Petracco, who belonged to the same political faction as the poet Dante, and went into exile with him and others 1302. When P. was about eight years of age, his father removed to Avignon, where the papal court was held; and here, and at the neighboring town of Carpentras, the youth studied grammar, rhetoric, and dialectics. Contrary to his own inclination, but in compliance with the wish of his father, he spent seven years in the study of law at Montpellier and Bologna; but 1326 his father died, and P. occupied himself partly with the gayeties of Avignon, and partly with classical studies, or rather the study of the Latin classics, as it was only toward the end of his life that he attempted to master Greek. At this time, he ranked among his friends the jurist Soranzo, John of Florence, the apostolic secretary, Jacopo Colonna, Bishop of Lombes in Gascony, and his brother, the Cardinal Giovanni, Azzo da Correggio, lord of Parma, and many other noble and learned personages. His illustrious admirers—among whom were emperors, popes, doges, kings, and sovereign-dukes—obviously thought themselves honored by their intimacy with the son of a poor notary, and some were even forward in proffering him their favor. But the great event in P.’s life (viewed in the light of its literary consequences) was his tenderly romantic and ultimately



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pure passion for Laura—the golden-haired, beautiful Frenchwoman. Concerning Laura, it must be said that positive knowledge is lacking; she is reported to us by tradition only. Some obscurity also hangs over P.'s relation to this lady; but it is almost certain that she was no less a paragon of virtue than of loveliness. From P.'s poems we learn, concerning her, only that she was a young married woman, whom P. enshrined in a romantic adoration, but with whom his friendship never became intimate. The poet seems to have rendered homage to her not so much as a personal woman, but as his chosen personification of womanhood in the abstract. He met her 1327, Apr. 6, in the Church of St. Clara in Avignon, and at once and forever fell deeply in love with her. The lady (if we accept the traditions) was then of the age of 19, daughter of Audibert de Noves, and had been married two years to a gentleman of Avignon, named Hugues de Sade. For ten years, P. lived near her in the papal city, and frequently met her at church, in society, at festivities, etc. He sang her beauty and his love in those sonnets whose mellifluous conceits ravished the ears of his contemporaries, and still hold an unfading charm. Laura was not insensible to a worship which made an emperor (Charles IV.) beg to be introduced to her, and to be allowed to kiss her forehead; but she seems to have kept the too ardent poet at proper distance. In 1338 P. withdrew from Avignon to the romantic valley of Vaucluse, where he lived some years, spending his time almost solely in literary pursuits. A most brilliant honor awaited him at Rome, 1341, where, on Easter Day, he was crowned in the capitol with the laurel-wreath of the poet. The ceremonies which marked this coronation were a grotesque medley of pagan and Christian representations. P. was, however, as ardent a scholar as he was a poet; and throughout his whole life, he was occupied in the collection of Latin MSS., even copying some with his own hand. To obtain these, he travelled frequently throughout France, Germany, Italy, and Spain. His own Latin works were the first in modern times in which the language was classically written. The principal are his *Epistolæ*, consisting of letters to his numerous friends and acquaintances, and which rank as the best of his prose works; *De Vitis Virorum Illustrium*; *De Remediis utriusque Fortunæ*; *De Vita Solitaria*; *Rerum Memorandarum Libri IV.*; *De Contemptu Mundi*, etc. Besides his prose-epistles, P. wrote numerous epistles in Latin verse, eclogues, and an epic poem, *Africa*, on the subject of the second Punic war; and it was this production which obtained for him the laurel-wreath at Rome. P. showed little solicitude about the fate of his beautiful Italian verse, but built his hope of his name being remembered on his Latin poems, which, it has been said, are now remembered only because of his name. In 1353 he finally left Avignon, and passed the remainder of his life in Italy—partly at Milan, where he spent nearly ten years, partly at Parma, Mantua, Padua, Verona,

## PETRE—PETREL.

Venice, and Rome. At last, 1370, he removed to Arquà, a little village prettily situated among the Euganean Hills, where he spent his closing years in close scholarly work, much annoyed by visitors, troubled with epileptic fits, not very rich, but serene in heart, and displaying in his correspondence a rational piety. He was found dead in his library on a July morning in 1374, his head dropped on a book.—P., though not knowing Greek, favored its study, and introduced the revival of classical learning in Europe. Literary culture was his ideal. He was not only far beyond his age in learning, but had risen above many of its prejudices and superstitions. He despised astrology, and the childish medicine of his times; but, on the other hand, he had no liking for the conceited skepticism of the mediæval *savants*; and, in his *De sui Ipsius et multorum aliorum Ignorantia*, he sharply attacked the irreligious speculations of those who had acquired a shallow free-thinking habit from the study of the Arabico-Aristotelian school of writers, such as Averrhoes. P. became an ecclesiastic, but was contented with one or two inconsiderable benefices, and refused all offers of higher ecclesiastical appointment. His intimates and supporters were among the rich and powerful; yet he advocated in his writings popular liberty and individual rights. He sang a pure love in verse surpassingly delicate and exquisite; yet his two sons were born to him by some woman unknown. Many such anomalies his character presents.—The Italian lyrics of P.—the chief of which are the *Rime*, or *Canzoniere*, in honor of Laura—have done far more to perpetuate his fame than all his other works. Of Italian prose, he has not left a line. The *Rime*, consisting of sonnets, canzonets, madrigals, were composed during a period of more than 40 years; and the later ones—in which P.'s love for Laura, long since laid in her grave, appears purified from all earthly taint, and beautiful with something of a beatific grace—have done as much to refine the Italian language as the *Divina Commedia* of Dante. Of his *Rime*, there have been probably more than 300 editions; the first that of Venice 1470; the most accurate that by Marsand (Padua 1819; Eng. trans. by Macgregor, 1851). Collective editions of his works have been published (Basel 1495, 1554, 1581, *et seq.*). Of numerous lives of him the principal are those of Bellutello, De Sades, Tiraboschi, Ugo Foscolo, and Geiger (1874); in Eng., Campbell (1841); Reeve in *Modern Classics for Eng. Reader* (1878).

PETRE, n. *pě'tér* [Gr. *petra*, a rock]: a stone, as *il saltpetre*. PETREAN, a. *pě-trě'ăn*, pertaining to or resembling rock or stone.

PETREL, n. *pě't'rĕl* [Sp. *petral*, a breast-leather for a horse: F. *poitrail*, the dewlap of an ox: It. *pettorale*, a breast-plate—from It. *petto*, L. *pectus*, a breast]: in *OE.*, a breast-plate.

## PETREL—PETRESCENT.

PETREL, n. *pětrěl* [F. *pétrel*, the petrel, the little Peter's bird—from L. *Petrus*, Peter]: classed formerly as a genus (*Procellaria*) of ocean birds, ranked sometimes among *Laridæ* (q.v.), sometimes constituted into a separate family, *Procellaridæ*; but now generally classed as an order, *Tubinares*, from the tubular form of their nostrils. They are sub-divided into several genera and more than 100 species. Of these, some are distinguished by having the bill hooked at the tip, the extremity of the upper mandible being a hard nail, which appears as if it were articulated to the rest; and in all, the nostrils are united into a tube which lies along the back of the upper mandible. They possess great power of wing, and are among the most strictly oceanic of birds, being seen often at great distances from land. Among them are reckoned the Fulmars (q.v.), Shearwaters (q.v.), etc., and the smaller birds commonly designated PETRELS, of which the Stormy P. is a familiar example. The Stormy Petrels form the genus *Thalassidroma* of recent ornithological systems, the name [Gr. sea-runner] being given to them in allusion to their apparent running along the surface of the waves, which they do in a remarkable manner, with great rapidity, particularly when the sea is stormy, and the mollusks and other animals forming their food are brought in abundance to the surface—now descending into the very depth of the hollow between two waves, now touching their highest foamy crests, and flitting about with perfect safety and apparent delight. Hence also their name Petrel, a diminutive of Peter, from the apostle Peter's walking on the water (Matt. xiv. 29). From the frequency with which flocks of these birds are seen in stormy weather, or as heralds of a storm, they are very unfavorably regarded by sailors. They have very long and pointed wings, passing beyond the point of the tail; and the tail is square in some, slightly forked in others. Their flight resembles that of a swallow. They are seen in the seas of all parts of the world, but are more abundant in the s. than in the n. hemisphere. The names Stormy P. and Mother Carey's Chicken are sometimes appropriated particularly to *Thalassidroma pelagica*, a bird scarcely larger than a lark, and the smallest web-footed bird known, of sooty black color, with a little white on the wings and some near the tail. One species, the Fulmar P., breeding on the rocks of the Scilly Isles, St. Kilda, the Orkneys, Shetland Isles, etc., like many others of the family, generally has a quantity of oil in its stomach, which, when wounded or seized, it discharges by the mouth or nostrils. Of this the people of St. Kilda take advantage, by seizing the birds during incubation, when they sit so closely as to allow themselves to be taken with the hand, when the oil is collected in a vessel.

PETRESCENT, a. *pě-trěs'sěnt* [Gr. or L. *petra*, a rock]: becoming stone, or of a stony hardness. PETRES'CENCE, n. -sěns, the process of converting into stone.

## PETRIE—PETRIFIED FORESTS.

PETRIE, *pě'trē*, GEORGE, LL.D. : antiquarian : 1790-1866, Jan. 18 ; b. Dublin, Ireland. Having made an exhaustive study of the archeology of Ireland, he was appointed librarian of the Royal Hibernian Acad. 1830. He founded the museum and library of the Royal Irish Acad., obtained various prizes for essays on antiquarian subjects, and received from the govt. a literary pension of £300. Among his numerous works were *Picturesque Sketches in Ireland*, and *The Ecclesiastical Architecture of Ireland*. He died at Dublin.

PETRIE, *pě'trĭ*, W. M. FLINDERS : English Egyptologist : b. 1853, June 3 —. He was educated privately, his object of study from an early age being Egyptology. He spent 1881-2 in Egypt, measuring and surveying with special instruments, his results being published in *Pyramids and Temples of Ghizeh* (1883). In 1884 he revisited Egypt, travelling at the cost of the Egyptian exploration fund, and again 1885. The results of his labors in 1884 are given in *Tanis* ; the fruit of his researches 1885 was the discovery of the site and ruins of the long-lost Græco-Egyptian city Naukratis, on the Delta. He has ever since been occupied with Egyptian exploration, and his discoveries have been of the highest value to historical research. His published works are numerous.

PETRIFICATION, n. *pě'trĭ-făk'shŭn* [F. *pétrification*—from Gr. or L. *petra*, rock ; L. *factus*, done or made] : conversion of an animal or vegetable substance into stony matter ; process of changing into stone ; the thing petrified. The word has fallen into disuse in science, giving place to the terms Fossil (q.v.), and Organic Remains. PETRIFICATIVE, a. *-tĭv*, able or tending to convert into stone. PETRIFIC, a. *pě-trĭfĭk*, having power to change into stone. PETRIFY, v. *pě'trĭ-fĭ* [F. *pétrifier*, to petrify] : to convert animal or vegetable substances into stony matter ; to fix in dumb amazement ; to become stone. PETRIFYING, imp. : ADJ. converting into stone. PETRIFIED, pp. *-fĭd* : ADJ. converted into stone ; amazed ; astounded.

PETRIFIED FORESTS: forests converted into stone. The most interesting example is Chaleedony Park, in e. Arizona, 8 m. s. of Carriza, on the Atlantic and Pacific r.r. ; it is said to contain at least a million tons, covering a thousand acres. The wood is beautifully agatized in all colors, due mostly to iron and manganese, and sections of it, 2-3 ft. diam., sawn and polished at Sioux Falls, S. Dakota, have been exhibited in e. cities. Some of the trunks are 150 ft. long and 10 ft. in diameter. Across a gulch, 45 ft. deep and 55 ft. wide, is 'Agate Bridge,' a petrified tree 3-4 ft. diam. and more than 100 ft. long. The trees lie broken and confused in a bed of volcanic ash and lava, and are visible only in gulches and basins where an overlying 20-30 ft. bed of sandstone has been worn away. The ashes and siliceous water, perhaps heated at the time, preserved and petrified the trees. Some of them have a hollow centre lined with crystals of amethyst or calcite. — 'Lithodendron Valley,'

## PETRO—PETROICA.

20 m. from Navajoe Springs in n. Arizona, is another locality where thousands of trees of as great size are found. They show the microscopic markings of the Araucarian pines, and are referred by some to the Jurassic, by others to the Cretaceous, period. Fossil wood abounds in the old volcanic regions of the west; also in other countries and geologic ages. On a branch of the Bay of Fundy, 1,400 ft. of carboniferous deposits have 68 successive levels of root-seams, with many petrified stumps standing where they grew, mostly *Sigillariæ*; one 4 ft. diam. The same condition is seen in an ancient forest in the Purbeck beds of the upper Oolite of England, where the trees were Cycads. In all these cases, as in other petrifications, a particle of mineral matter was ready to take the place of every dissolved particle of the organism. Prof. Göppert steeped plants in siliceous and other mineral waters, and found that in a few days the lapidifying process was well begun. Texture and rings, etc., of wood would be preserved in such a process, and various color given by varying mineral matter in solution.

PETRO-, prefix, *pět-ro-* [Gr. *petros*, stone, rock]: pertaining to or consisting of stone or rock.

PETROBRU'SIANS: see HENRICIANS.

PETROGRAPHY, n. *pě-trög'ră-fĩ* [Gr. *petros*, a stone; *graphō*, I write]: in *geol.*, used in the same sense as petrology—thus, we speak of the 'petrographic' (*pět'rō-grăf'ík*) character of a formation, as opposed to its 'paleontological.'

PETROICA, *pě-troy'kâ*: genus of birds of family *Sylviadae*, natives of Australia, nearly allied to the Redbreast, and to which its familiar name *Robin* has been given by the colonists. The song, call-note, and manners of *P. multicolor*, a species abundant in all s. parts of Australia, very much resemble those of the European bird but its plumage is very different; the male having the head, throat, and back jet-black, the forehead snowy-white, one longitudinal and two oblique bands of white on the wings, and the breast bright scarlet; the female is brown, with red breast. There are several other species. birds of beautiful plumage.

## PETROLEUM.

PETROLEUM, n. *pě-trō'lē-ŭm* [Gr. or L. *petra*, rock; L. *olĕum*, oil: It. *petrolio*: F. *pétrole*]: a liquid mineral pitch of a dark yellowish-brown color, so called from its oozing out of several strata like oil; known also as *mineral oil*. PETROLINE, n. *pě'rō-lĭn*, a substance resembling paraffin, obtained by distillation from the petroleum of Rangoon.—*Petroleum* is a natural liquid hydrocarbon, whose formation and genesis are in dispute among geologists. It is known by various names—*Rock Oil*, *Naphtha*, etc.—some incorrectly applied. In various places it has been known for many ages, but the immense development of the petroleum industry, including the drilling of wells and refining of the crude oil, is a growth since 1860. Oil had long been known to exist in the earth in this country, notably in the region of the headwaters of the Allegheny river. The early settlers had noticed it on the surface of the streams in that part of Pennsylvania, and had collected it in some places by absorbing it in blankets or cloths, and then expressing it. Even before their day the Indians, it is believed, had dug pits in which it collected. They are supposed to have used it for mixing with their paint for decorating their persons. Early in this century some was collected from wells which had been bored for salt. Natural gas also was evolved from these wells. In the winter of 1858-9 Col. E. L. Drake of New Haven, Conn., moved to the oil region, as it is now called, and began to drill a well for oil. This was at Titusville, Penn., on Oil Creek. 1859, Aug. 26, at the depth of 71 ft., oil was found. This is the classic date in the history of American petroleum. At once the oil-fever began, and every year saw more wells bored and more oil produced.

Until the discovery of the Pennsylvanian, the Burmese (Rangoon) P. or rock-oil was one of the best known. It is obtained in a treacly state by sinking wells about 60 ft. deep, and consists of several fluid hydrocarbons, with 10 or 11 per cent. of the solid hydrocarbon paraffin. The different grades of hydrocarbons that are produced from it are highly prized as burning and lubricating oils, and for removing greasy stains. P. is found abundantly at Baku, on the Caspian Sea, where it is manufactured on a very large scale, and exported over Russia and e. Europe in specially constructed boats and trains. It is largely used in its crude state as fuel for engines.

Prominent among the wonders of our time, however, as regards new fields of industry and wealth, are the discoveries of the petroleum regions of the United States. The principal supplies are obtained in Penn., W. Va., and Ohio, a considerable quantity being obtained also in w. Canada. The Ohio oil, known to the trade as Lima oil, is very impure, and has presented many obstacles to economical refining. The Canada oil is rich in sulphur and phosphorous compounds, which give it a highly disagreeable odor. Other regions in N. America produce it, but the Pennsylvania yield is six or seven times greater than all the rest put together. It was known to

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the Jesuit missionaries 1627 as a natural curiosity, and was spoken of in the 18th c. as Seneca oil, from the Seneca Indians in N. Y., who kindled it in their religious ceremonies. Sources have lately been found in the Argentine Republic and in Ferghana (Russian Asia).

There is much curiosity respecting the origin of these great natural sources of petroleum. It is the opinion of many geologists that it has in most cases been produced by the decomposition of both vegetable and animal matters. In this respect it would differ from coal, product of the decay of vegetable matter alone. It appears that the Pennsylvanian oil proceeds from shales of Carboniferous age; the Canadian, from those of Devonian age. In both countries the oil is found in cavities in sandstone, and has therefore been derived from subjacent rocks. It is now known that P. has formed in rocks of nearly all geological ages. Prof. Dana, mineralogist, says that the conditions favorable to the formation of native P., as shown by the characteristics of the deposits in which it is found, are: (1) diffusion of organic material through a fine mud or clay; (2) the material in a very finely divided state; and (3), as consequence of the preceding, the atmosphere excluded as far as possible from the material undergoing decomposition.

In Penn. the first borings for P. took place 1859, in which year 82,000 barrels (reckoned at 43 gallons each) were obtained; in 1861 the produce had reached 2 million barrels; since then, as a rule, it has increased from year to year. In 1879 the annual production of the United States was reported about 15,000,000 barrels (600 million gallons). In 1878 the export from the United States had an aggregate value of \$46,000,000—an enormous sum when it is remembered that the first exports took place so recently as 1861. Of late years, this trade is said to have employed in N. America as many hands as coal-mining and the working of iron: 28,249,597 bbls. were produced 1887.

Laws have been passed in most civilized countries to regulate the use of petroleum, such as limiting the amount to be kept in store, and prohibiting the sale of such kinds as give off an inflammable vapor below a certain degree of temperature. There are usually special warehouses for the reception of petroleum, and special cars with iron tanks for its transportation. But the principal method of transportation now in use in the United States for the crude oil is by pipes. Immensely long lines of pipes are now used, through which the oil is pumped to the refineries or centres of distribution from the oil regions. To such a scale has this been carried that it is even proposed to construct a 'pipe line,' as they are called, from the Russian P.-field at Baku, on the Caspian Sea, to the shores of the Baltic Sea.

In Canada there are four areas in which oil-springs are found—two in Enniskillen, a third in Mosa and Oxford townships, a fourth in Tilsonburg. The Canadian oil, as may be inferred from what has been said above,

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is more troublesome to purify than that found in the U. S. Although it occurs abundantly, the production 1878 was not more on the average than 1,200 bbls. per day. Natural petroleums and the paraffin oils distilled from shale or coal very closely resemble each other, so that both kinds are used for the same purposes. In Scotland the paraffin-oil industry is important, yielding not much less than 30 million gallons of crude oil annually, from which solid paraffin and other products are obtained, as well as lamp oil. See PARAFFIN OIL: SHALE. In Prussian Saxony the same or very similar products are distilled on nearly as large a scale from an earthy lignite found in the brown coal formation between Weissenfels and Zeitz. In Galicia, chiefly in the Boryslaw dist., there are both a native oil and a native bitumen (ozokerite) found, which 1873 yielded burning oil and paraffin to the value of nearly \$2,500,000; and the industry is still prospering. There appears to be a considerable supply of P. also in Roumania.

In 1865 a shale was discovered in New S. Wales, similar to the Boghead coal or Torbanehill mineral of Scotland, but richer in oil, and more free from sulphur. When distilled at Sydney, from 100 to 160 gallons of oil were obtained from one ton of shale. The seam in Hartley district is  $5\frac{1}{2}$  ft. thick. Of this substance, the S. Wales Shale and Oil Company raised 15,598 tons 1876, valued at about \$225,000; and there appears to be an extensive deposit of it in the district. These shale-oil industries (see PARAFFIN OIL) are held in check by the low price at which American petroleum is usually sold.

The P. wells are drilled by the regular methods in use for artesian wells. Most of the present American wells are more than 200 ft., and many are more than 1,000 ft., in depth. They are from 6 inches upward in diameter. A wrought-iron tube, less in diameter than the bore, is inserted, and by annular packing, at varying depths, surface-water is excluded. Many of the wells have a second pipe, with a pump inserted to raise the oil; others are flowing wells. In 1861 the first large *flowing* well was struck—that is, a well up which the oil rose so profusely as to flow over the surface, yielding 1,000 bbls. (of 40 gallons each) per day. ‘No mining enterprise had ever offered such sudden fortunes. A well costing a few thousand dollars might yield from 100 to 2,000 bbls. of oil daily with no expense for pumping. The Noble well yielded, in little more than one year, 500,000 bbls. of oil. The Sherman flowed 450,000 bbls. in about two years.’

It often happens that a well begins to run down in yield. In such cases it is often ‘shot,’ or ‘torpedoed.’ A cartridge of nitro-glycerine is lowered to the bottom and is exploded by a percussion-cap on which a weight is dropped, or by electricity. This opens cavities and cracks in the surrounding rock and increases the yield for a varying period.

The process of manufacturing or refining P. is very simple. It consists in distilling the crude oil. This involves,



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however, more than a mere evaporation. The hydrocarbons of high carbon percentage have a tendency, on exposure to heat, to split up into those of lower boiling-point, or, what is the same thing, of lower carbon percentage. This process is termed 'cracking.' As the object of the refiner is to produce a medium grade of oil, he endeavors to secure a larger quantity by decomposing the heavier products by this method. The stills generally are sheet-iron, sometimes cast-iron, tanks, in which the oil is heated. As the lighter products evaporate, they are collected and separated for use in the manufacture of water-gas and naphtha-gas, for gas machines, for cleansing processes, etc. As the intermediate portions come over, they are condensed and separated as kerosene oil. The heavier products are used for lubricating oils and other purposes. 'Cracking' is brought about by making the still high, so as to keep the gasified hydrocarbons a long time in the hot body of the apparatus, and by introducing superheated steam at the proper period.

To make the kerosene colorless, bleaching is required. This is effected by agitating it with oil of vitriol, concentrated sulphuric acid. This decomposes the organic coloring matter, which separates with the acid in a layer of 'sludge acid.' It is thrown away. The oil is freed from traces of acid by agitation with an alkali, such as caustic soda, and is ready for use.

Owing to the comparative stability of the hydrocarbons present in P., and the absence of the more complicated oxygen or nitrogenholding organic compounds, it has proved singularly barren in the production of side products. In this way it offers a great contrast to coal-tar, the source of so many complicated compounds, including colors, aniline and others, which are triumphs of synthetic chemistry. The side products of P. are principally the following:

NAME.	Specific Gravity.	Boiling-Point.
Rhigolene.....	·625	65° F.
Gasolene.....	·665	120
C Naphtha.....	·706	180
B ".....	·724	220
A ".....	·742	300
Kerosene.....	·804	350
Mineral Sperm.....	·847	425
Neutral Lubricating Oil.....	·883	575
Paraffin Oil		
Paraffin Wax.....	·848	
Asphaltic Residuum		

The production of crude P. in the United States increased from 2,000 barrels (42 gallons each) in 1859 to 45,882,672 in 1891. In the first year the production was wholly in Penn. and N. Y.; from 1875, W. Va., O., and Cal. contributed to the aggregate; and from 1886, Ky., Tenn., Wyo., Colo., and a few other states added small quantities to the total. In 1901 the production of Penn. and N. Y. was 13,831,996; O. 21,648,083; W. Va. 14,177,126; Colo. 460,520; Cal. 8,786,330; Ind. 5,757,086; Kan., Tex., and Mo. 4,510,430. Bet. 1859-88 the produc-

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tion of Penn. and N. Y. was 346,797,111 barrels ; W. Va. 4,783,448 ; O. 18,041,076 ; Cal. 2,980,042 ; and Ky., Tenn., Wyo., Colo., and other states 587,429. Estimates for Canada 1862-88 give 7,712,682 barrels, with 772,392 barrels 1888. At an average value of \$1.00 per barrel, the total product of the U. S. (1896) was worth \$57,887,596. The total product (1892) was 53,986,313 barrels ; (1893) 50,509,136 barrels ; (1894) 48,412,666 barrels ; and (1895) 99,344,516. The exports of P. from the U. S. (1896) were : crude 110,923,620 gallons ; naphtha, benzine, and gasoline 12,349,319 gallons ; illuminating 716,455,565 gallons ; lubricating 50,525,530 gallons, aggregating 890,458,994 gallons ; exports of crude P. (1901) 124,648,930 gallons.

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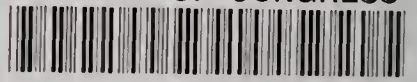








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