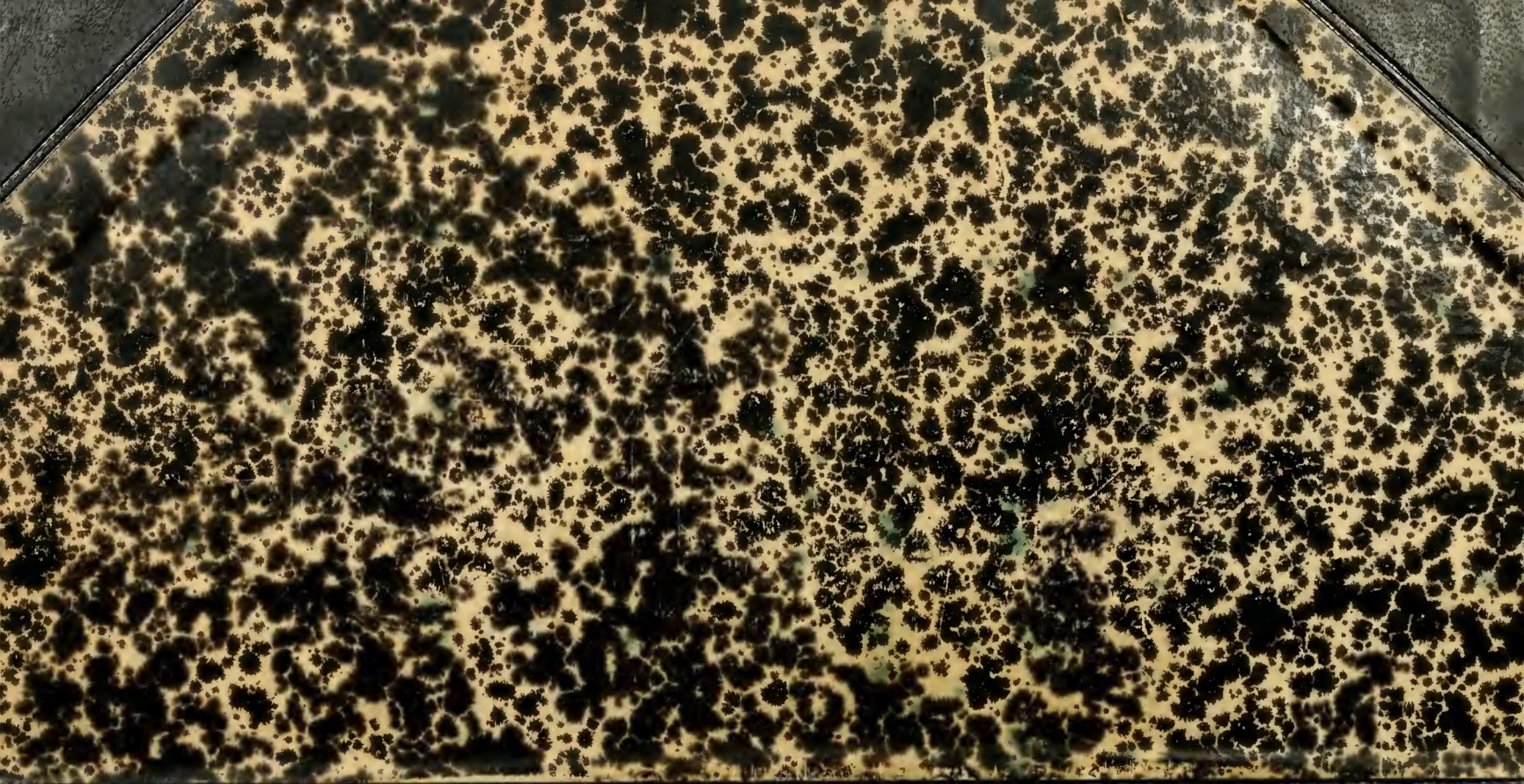

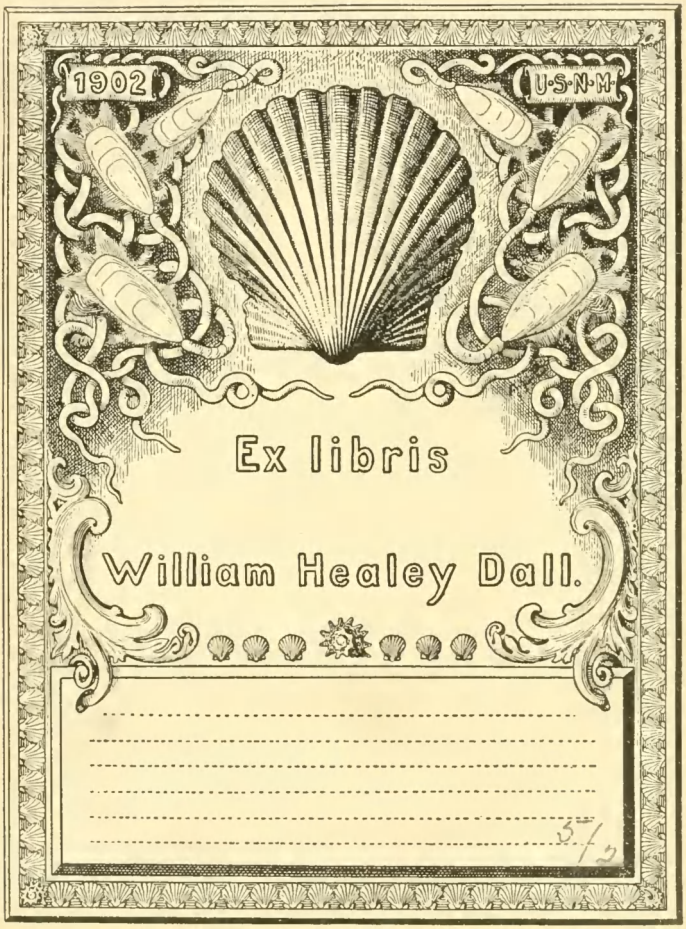
1902
U·S·N·M
Ex libris
William Healey Dall.

Vol. I. **No. I.**

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EXCHANGES FOR MOLLUSCA ONLY.

CYPRÆA erosa, L. lynx, L.
CERITHIUM, maculosum, Kien. eburneum Brug.
CYCLOSTOMA sulcatum, Lam. elegans Mull.
LYMNÆA zebra Tryon.
STROMBINA bicanalifera Sby.
Fissurella volcano. Rve. Columbella fulgurans Lam.

Prof. D. S. SHELDON,
Davenport, Ia

SUCCINEA putris L.
HELIX arbustorum L.
" nemoralis L
" ericetorum, Mull.
" rotundato, Mull.
" lapicida L cellaria Mull
Pupa muscorum, L.
Cionella subcylindriea.

E. LEHNERT,
Washington, D. C.

GONIOBASIS simplex, Say. carinifera, Lam. bella, Con. perangulata, Con. sordida Lea symmetrica, Hald ebenum, Lea
Melantho subsolida Anth.
Unio-rubiginosus Lea.
pustulosus Lea., gracilis, Barnes

W. A. MARSH,
Aledo, Illinois.

HELIX albolabris, Say. alternata, Say. clausa, Say. elevata, Say. fallax, Say. hirsuta, Say. inflecta, Say. solitaria, Say. monodon. Rackett. Sayii. Binney. Pupa armifera, Say. corticaria, Say. Fallax, Say. Unio elegans Lea; lachrymosus, Lea; parvus, Barnes

EDWARD A. ENOS,
Connersville, Indiana.

NASSA fossata Gld.
Purpura saxicola Val.
Amycla gausapata Gas.
Adula falcata Gld.
Acmæa spectrum Esch.
scabra, Nutt. pelta, Esch.
Hipponyx cranioides, Carp.

G. W. PUTERBAUGH,
Greenfield, Indiana.

American and Foreign Unionidae for exchange. Send for list.

No responsibility will be assumed for the standing of the above parties.

Address, **WILLIAM D. AVERELL, Proprietor,**
CHESTNUT HILL, PHILADELPHIA.

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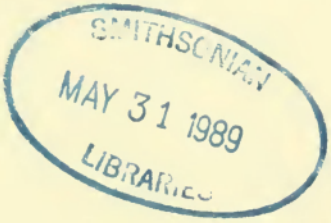

Prof. Wm. H. Dall.

The Conchologists' Exchange.

VOL. I. CHESTNUT HILL, PHILADELPHIA, PA., AUGUST, 1886. No. 2.

A PUBLICATION DESIGNED FOR CONCHOLOGISTS AND THEIR INTERESTS.

WM. D. AVERELL,
EDITOR AND PUBLISHER.

Printed by JOHN C. CLARK & SONS, Stationers and Printers, 228 and 230 Dock Street, Philadelphia, Pa.

Correspondence upon Conchology, as well as reliable items of interest concerning the Mollusca, their habits, localities, etc., kindly solicited from all.

Matter for publication must be received by the 10th of each month.

TERMS:

Subscription per Year, - - - - 25 Cents.
To Foreign Countries, - - - - 35 "
Single Copies, 3 Cents Each.

CLUB RATES:

3 Copies One Year,				- - -	$ .60
5	"	"	"	- - -	.90
10	"	"	"	- - -	1.65
20	"	"	"	- - -	3 00

Remittances should be sent by Money Order, Postal Note or by Registered Letter. Please make Bank Drafts and Money Orders, and address all subscriptions and correspondence to

WM. D. AVERELL,
Chestnut Hill,
Philadelphia, Pa., U. S. A.

Advertising Rates given on application.

SALUTATORY.

It is customary to salute patrons in the first issue of a periodical, but as our space was limited to one side of a postal card we were necessarily cramped for room, and could not say all we desired. The encouragement we prayed for has been received, friends have wished us success, and better still, they have sent their subscriptions. We shall endeavour to be concise and plain in language, confining our attention to the science of Conchology and giving information of vital interest to the student of Mollusca. As an earnest of our good intentions in this respect we refer you to the columns reserved for Exchanges, by the use of which we trust your cabinet and libraries may be rendered more attractive and valuable. As improvements become advisable we shall adopt them thinking ourselves well repaid if by the kindly intercourse thereby engendered we spread the seed of knowledge which will be enjoyed afterward in the ripened state, at the mutual harvest home.

CHANGE OF ISSUE.

We intended at the inception of our enterprise to issue our paper semi-monthly, but upon sober second thought, backed by the advice of friends, we have made a monthly issue of it. Among other reasons urged for the alteration is that exchangers, especially foreigners, (and it is our ardent desire to bring Conchologists of all nations into the most happy relations), will not have time to correspond before the exchanges are altered or disposed of nearer home. This reason was conclusive; hence we must ask our patrons to excuse us for the change. The price, which is merely nominal will remain the same.

EDITORIAL.

What a fascinating study is Conchology. Take a perfect shell. Its globule ready-fused by the hand of the Maker is before you; its face-marks are plain and distinguishable. Days need not be spent in determining its family. A novice finding several species of Murex upon the sea shore may readily see the family resemblance by the varices, more or less depressed upon the whorls; and by the straight anterior canal. And so with other families "*ad infinitum*," each having a distinctive character. The determination of

NECROLOGY.

Our friends will confer a favor by sending us reliable information of the demise of Conchologists; short notices of whose decease we will insert here, free of charge.

Sheldon, Daniel Sylvester, A. M., L. L. D., Prof. Griswold College, Davenport, Iowa. Born December, 1808. Died, 5th June, 1886.

Prof. Wm. H. Dall

The Conchologists' Exchange.

VOL. I. CHESTNUT HILL, PHILADELPHIA, PA., SEPTEMBER, 1886. No. 3.

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WM. D. AVERELL,
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EDITORIAL.

Mr. Bryant Walker of Detroit, Mich. writes in regard to the reception of his circular of September, 1885, which was issued for the purpose of securing information about the distribution throughout the United States and Canada, of all the species of land and fresh-water mollusks common to Great Britain and North America, including also such species as are closely allied if not identical with corresponding British forms:—"A large number of replies were received and forwarded to Mr. Taylor, (Editor of the Journal of Conchology, Leeds, England, Ed.), which covered the ground quite satisfactorily. The extreme points from which information was received being Massachusetts and Florida on the east; and Washington Territory and California on the west. The greatest lack however was in reference to the Gulf States. Mr. Taylor's Monograph has not yet been published. Any further information would be very acceptable. I shall be glad to send a copy of my circular to any one who would be willing to aid Mr. Taylor."

We wish Mr. Walker the greatest success in his laudable efforts in aid of Mr. Taylor's project, and we hope that those of our readers who can send or influence the information lacking from the Gulf States, will do so at the earliest possible moment.

So many kind letters have been received by us from friends all over the country testifying to the good fortune "THE CONCHOLOGISTS' EXCHANGE" has brought to their doors, that we have reluctantly abandoned the idea we first had of publishing a number of the letters received, as the kind wishes expressed would fill the paper. Some have closed out all their duplicates; others have made fewer exchanges, but write us they have made valuable, and we trust lasting friendships. This is very encouraging to us, and we take this opportuniiy of thanking you one and all for your many favors and trust you may not only support our little paper but induce your friends to do the same.

No late works have been received with more general satisfaction than have "Structural and Systematic Conchology" and "Manual of Conchology," edited and published by Prof. Geo. W. Tryon, Jr. The call at present is for works describing the latest developements of Science and the idea is realized in these standard works. Students of all degrees of fortune

have had their needs considered as the former work has been issued in four editions and the latter in three; the cheaper editions of both works bring them within the means of all students of nature.

It is unwise, not to say careless to pass by shells upon collecting tours without a thorough examination. We have one valve of Unio circulus, Lea, which has the usual modest epidermis of its species; while the beautiful coloring of its nacre suggests the hues of an autumnal sunset. A former owner aptly labelled it "a poor specimen outside, but one of a thousand within."

Professor Forel discovered that specimens of Limnæa found in the deep waters of the Swiss lakes had their pulmonary sacs filled with water instead of air. Another curious fact commented upon was that when the animal was exposed to the atmosphere the normal method of respiration was resumed without any appearance of suffering whatever.

Why do you keep that box of duplicates lying there in the dust, when it should be far on its way towards helping your fellow student in his researches? He has something in his cabinet that you may have in trade for the asking, while that box is fast becoming a fossil right in your sight, and its contents are doing neither your friends nor you any good.

What with the constant work of the Steamer "Blake" and others of the United States Coast Survey, and the many new forms being discovered by Professor Verrill and his compatriots it can scarcely be said that our nation is behindhand in the march of scientific progress.

Your attention is respectfully called to L. G. Kiener's rare and very valuable work published in another column. This is the chance of a life-time and is well worth the money.

A new Mitra has been discovered by Professor Dall.

The Faunatic dependence of the Mediterranean upon the Atlantic.

The voyage of the French despatch boat "Travailleur" in 1880 and 1881 was the means of deciding conclusively the absolute dependence of the Mediterranean Sea upon the Atlantic Ocean for its fauna. The Mediterranean at the depth of 2600 metres was often found to have a muddy bottom covered in many places with large quantities of pelagic mollusks such as Hyalea, Carinaria, etc. Not finding the conditions necessary for the high development of animal life the "Travailleur" sailed westward and when outside the Straits of Gibraltar the character of the sea bed was found to have entirely changed. Pebbly, sandy and rocky areas were encountered which brought with them a gratifying increase in the animal life yielded by the dredges. According to Prof. A. Milne Edwards who accompanied the expedition the more the Mediterranean forms are studied the more it becomes evident that its species can be found in the Atlantic. The similarity of species was especially noticeable upon the coasts of Portugal, Morocco and Senegal; many forms being found which were considered indigenous to the Mediterranean coasts, while on the latter numerous species were encountered which were believed to be peculiar to the Atlantic, which has proved that the fauna of the Mediterranean Sea had its origin in the Atlantic Ocean by way of the Straits of Gibraltar. —From The work of the "Travailleur" in *American Naturalist*, Jan., 1883.

A Word to our Younger Friends.

It has not been so very long since our entire collection consisted of a conch or two from the sea-shore and a few mussels from the river near us. Common names, but dear to us, as were the shells. We heartily sympathize with you in your early struggles and disappointments and advise you not to give up in despair because your first essay has had a frown for its reward; or your first exchange advertisement received but one answer. Visit the sea, the streams and the woods and wherever you may be able to find nature's tributes, tributes which will be so much ammunition for the long winter's battles. We will try not to be slighted if you

do not use either our "Price List" or "Exchange column" but you can certainly afford to subscribe to our little paper if for nothing else than to see and hear how the other bees are hiving. We cordially invite you to ask us questions and we will give you any information we possess. In conclusion we beg of you not to be dismayed if you see your exchanges in the company of more advanced collectors. They certainly will have patience with you when they think of their own early struggles for recognition and reward.

Arion subfuscus and Helix hispida var. fusca in Yorkshire.

On June 2d, 1886, I found three specimens of Arion subfuscus, Drap. in a garden at Lofthouse. The species is well marked being of an orange-brown color the shield somewhat brighter and clearer than the other parts. It is larger than a hortensis and it is surprising that the species has been so long overlooked. As it is apparently not rare it must have been taken for a yellow variety of A. hortensis. I sent the three specimens to Mr. Cockerell of Chiswick, who identified them for me. Together with a few other slugs and shells I sent a few specimens of Helix hispida which Mr. Cockerell states are Mencke's variety fusca, well known on the Continent but which does not appear to be recognized in the British Isles —George Roberts, Lofthouse, Wakefield, in "*Zoologist*" for August, '86.

EXCHANGES IN MOLLUSCA.

Exchanges which are merely indirect offers of articles for money will not be accepted.

We will not hold ourselves responsible for any mistakes or disappointments occurring because of bad faith on the part of any of our exchangers.

Terms which must be cash with order, are as follows:—Exchanges of 20 words including address, 10 cents; for each additional 10 words the charge will be 5 cents. No exchange will be inserted for less than 10 cents.

ZONITES nitidus, Müll. Helix Mooreana, W. G. B, volvoxis, Parr, elevatum, Say, multilineata, Say, exoleta, Binn., thyroides, Say, Leaii, Ward, pulchella, Müll. Succinea, ovalis, Gld., avara, Say. Limnæa palustris, Müll. Physa gyrina, Say, Forsheyi, Lea. Bulinus hypnorum, L. Segmentina armigera, Say. Melantho obesa, Lewis. Pleurocera subulare, Lea. Goniobasis livescens, Mke., carinifera, Lam., comalensis, Pilsbry. Unio subovatus, Lea. Anodonta ovata, Lea.

JEROME TROMBLEY,
Petersburg, Mich.

OFFERED:—Unio Buckleyi, Lea, hebes, Lea, fuscatus, Lea. Strophia incana, Say. Oliva literata, Lam. Lucina floridana, Con. Modiola sulcata, Lam. 150 species Florida shells. Wanted:—Monoceros grande, Gray. Turbinella pyrum L. Nassa grandiosa, Hds. Polygyra avara, Say, pustuloides, Bld. Triodopsis Hopetonensis, Shutt. Unio Kleinianus, Lea. Neptunea antiqua, L; Pisania pusio, L. Oliva Braziliana, L. Admete viridula, Fab. Conus figulinus, L., ammiralis, L., augur, Hwass. Malea ringens, Swn.

CHAS. T. SIMPSON, Ogalalla, Neb.

HAVING made several collecting tours to the West Indies, I have a goodly number of both marine and land shells for exchange. I can also furnish fine specimens of Unio Canadensis, Lea, which are found in this region. Address J. J. BROWN, M. D.,
Sheboygan, Wis.

FIFTY species Ohio Unionidæ and thirty species Ohio Helicidæ for species from South and West.

PROF. E. T. NELSON, Delaware, O.

OFFERED:—Liberal exchanges of Cape shells for specimens of Marine and Fresh-water shells from all parts of the world.

MARY GLANVILLE, Grahamstown, So. Africa.

WANTED:—From different localities, species of Goniobasis, Pleurocera and other genera of the Family Strepomatidæ, for comparison and study. Will exchange other shells for them, either Land, Fresh-water or Marine.

A. A. HINKLEY,
DuBois, Washington Co., Ills.

SWISS Land and Fresh-water shells offered in exchange for British species.

Dr. RUDOLPH HAEUSLER,
128 Kensington Park Road, London, W.

OFFERED:—Unio heterodon; Margaritana undulata; Pisidium Adamsii, Virginicum, compressum; Sphærium securis, occidentale, Novi eboraci; Vertigo ovata and others.

BYRON P. RUGGLES,
Hartland, Vt.

MICHIGAN shells to exchange for Land and Fresh-water species from other localities.

BRYANT WALKER,
Moffat Building, Detroit, Mich.

OFFERED—Goniobasis comalensis, pleurostriatus; Helix auriformis, texasiana, febigeri, mooreana, berlandieriana, espiloca; Helicina tropica, occulta; Bulimulus schiedianus, mooreanus; Gundlachia, Pyrgulopsis, for fresh water shells.

H. A. PILSBRY, Davenport, Iowa.

Miscellaneous Exchanges for Mollusca.

Tertiary and other fossils from Southern States and Europe; 50 species of Bird's Eggs; and 60 pounds of Minerals consisting of Amethyst on Agate; Agates rough and polished; Pyromorphite; Native Copper; Zinc blende; Galena; rare Iron Ores &c., &c., for strictly fine and correctly named Mollusca from South and Central America, Asia, Africa and Australia.

Address W. D AVERELL,
Chestnut Hill, Philada., Pa.

BOOK EXCHANGE.

[OPEN TO ALL SCIENTISTS.]

OFFERED—Ohio Geological Reports for Penna. Geological Reports. Also, Powell's 2d Annual Geological Report for the 3d or 5th.

Prof. E. T. NELSON, Delaware, Ohio.

OFFERED—Kirby's Butterflies and Moths, new, bound, for exchange. Wanted—Cooke's "Handbook of British Fungi;" "Rust, Smut, Mildew and Mould," or any other good works. ARTHUR DOWNES,
Combe Raleigh, Honiton, Devon, Eng.

FOR EXCHANGE—"Knowledge," Annals of Natural History and Midland Naturalist from April to August. T. F. UTTLEY, 17 Brazenose St.,
Manchester, Eng.

OFFFRED—Woodward's "Manual of the Mollusca" and Scientific Recreation. Wanted—Geological Works. GEO. E. EAST, JR, 10 Basinghall St.,
London, E. C.

OFFERED—Woodward's Manual of the Mollusca '75 Edition; Leidy's Memoir of the Extinct Sloth Tribe, N A; Lea's Syn. of Family of Naiades, '52 edtn.; Hayes' Descrip. Inf. Max'y. Bones of Mastodons, 10 plates; Agassiz & Gould's. Comp. Physiology, Bohn's edt'n; Coultas, Prin. Botany, Cryptogamia; Lea's On a Fossil Saurian of the New Red Sandstone Formt'n.; Leidy's Geol sketch of Est. & Fr. Water deposit of Judith R. &c., prest'n copy; Meigs' Obs. Rep. Organs of Dolphin; Lesquereux's Cretaceous Flora, 30 plates. Smith'n Mis. Col. Vol. 4, Neuroptera, Vol. 6, Diptera and Caleoptera 3 pp. out.

WANTED—First 3 vols. Lea's Obs. Genus. Unio; Say's American Conchology; Goulds Invertebrata of Mass.; Kiener's plates of Shells; Carpenter's works; Tryon's Monog. Terr. Moll. of U. S.; Sowerby's Conch. Manual and Plates; or offers in works on Conchology. W. D. AVERELL,
Chestnut Hill, Phila.

ANSWERS TO CORRESPONDENTS.

[OPEN TO ALL SUBSCRIBERS.]

Amateur:—Helicina subtropica is not described in W. G. Binney's "Land and Freshwater Shells of North America," and it therefore looks as though your specimens were misnamed. It may be H. tropica Jan which is synonymous with H. orbiculata, Say. Habitat, Texas to Georgia, Tennessee to Florida.

B. P. R.—Limnæa gracilis Jay, was discovered by Prof. Emmons in Lake Champlain. Dr. J. Lewis also found it in Schuyler's Lake, N. Y. The color and form of this shell would indicate its preference for clear, deep water.

T. S. H. New Orleans, La.—Linnæus was knighted by the King of Sweden in 1757, as a reward for an invention of his by which the fresh-water pearl mussel was made to produce its pearls artificially.

Inquirer, Hartford, Ct.—You are correct. Unio Cunninghami was found in the lakes of Sumter Co., Fla.; but it received its name from Prof. Berlin H. Wright.

C. T. S.—Try a weak solution of some colorless acid taking care to apply it only to the parts of the shell needing removal. Will inquire further.

PUBLICATIONS RECEIVED.

1 "The Tertiary Fauna of Newton and Wautubbee, Miss" by Otto Meyer and T. H. Aldrich. 2. "Catalogue of Uniones in the cabinets of W W. Calkins," (now the property of T. H. Aldrich), from T. H. Aldrich, Cincinnati, Ohio.

"List of Shell-bearing Mollusca of Michigan," by W. H. DeCamp, M. D., from the "Kent Scientific Institute."

"The Shells of Pettis County, Mo.," by F. A. Sampson, Sedalia, Mo., from the author.

Lists of "Hygrophila and Thalassophila" "Unionidæ and Cyrenidæ" in the collection of J. J. Brown, M. D., Sheboygan, Wis.

NECROLOGY.

Captain D. H. Murdoch, U. S. A., an enthusiastic student of nature was drowned in the Grand River, Utah, on June 6th, 1886.

STRIÆ.

Our friend, Dr. J. J. Brown of Sheboygan, Wis., having travelled very extensively in the West Indies, Honduras, Florida, etc., kindly promises to write an article describing his travels there which we hope to publish shortly.

Prof. R. P. Whitfield has edited a valuable work in his "Brachiopoda and Lamellibranchiata of the Raritan Clays and Greensand marls of New Jersey;" lately published by the Government Printing Office.

Charles Townsend of the Smithsonian Institution will sail early in October for British Honduras, to study the Natural History of that country.

Dr. S. H. Wright and Son of Penn Yan, N. Y, will visit Florida in October and expect to spend six months there collecting.

Correction:—Rev. A. B. Kendig's address is 35 Dale St., Boston, and not 5 Hanover St., Lynn, Mass., as printed in last issue.

Alphabetical List of Shells received since the issue of Price List of Mollusca No. 2; sold under same conditions.

TERMS:—Cash with order. Express charges to be borne by purchasers in all cases.

UNIVALVES

Azeca.
tornatellina, Lwe..... 5

Cypræa
vitellus, L..... 25
helveola, L..... 10
crosa, L..... 10, 15

Cyclostoma
hæmostoma, Anton..... 15 to 25
unifasciatus, Sby..... 15, 20

Cerithium
citrinum, Sby..... 10, 15

Crepidula
navicelloides, Nutt..... 10

Chama
circinata, Monts..... 10, 15

Dolabella
Rumphii, L..... 25 to 50

Eulima
acicula, Gld..... 5

Fusus
cœlatus, Rve..... 10

Io
fluvialis, Say..... 5, 10

Lucidella
aureola, Gr..... 3

Melantho
subsolida, Anth..... 5

Murex
bicolor, Val..... 20
Martinianus..... 20
brevispina..... 20
palma-rosæ, Lam..... 50, 75

Nacella
incrassa, Hds..... 10

Neritina
dilatata, Brod..... 5
Layardi, Rve..... 10, 15

Ostodes
strigatus, Gld..... 10, 15

Oliva
irisans, var. tremulina..... 10 to 40
" " nobilis, Rve..... 40, 50
gibbosa, Born..... 25 to 40
tigrina, L..... 25 to 50
inflata, Lam..... 15 to 25

Physa
aurantia, Cptr..... 15

Pedipes
afra, Gmel..... 3, 5

Trochus
Josephina, Ad..... 5

Trypanostoma
Conradi, Tryon..... 5
subulare, Lea..... 3

BIVALVES

Anodonta
cataracta, Say..... 5, 10
imbecilis, Lea..... 5, 10

Anomia
epphippium, L..... 5, 10

Adula
falcata, Cpr..... 15 to 25

Avicula
sterna..... 15

Artemis
concentrica, Born..... 25

Catinella
explanata, Gld..... 5, 10

Chama
iostoma, Con..... 20, 30

Chione
gallina, L..... 10, 15
gemma, Tott..... 3, 5
Isabellina, Phil..... 15
undulosa, Lam..... 5, 10

Cardium
retusum, L..... 15

Donax
trifasciatus, Rve..... 10

Dosina
discus, Rve..... 10

Gouldia
flabella, Con..... 5, 10

Iridena
rubens, Lam..... 40, 50

Lucina
Jamaicensis, Lam..... 20

Margaritana
marginata, Say..... 15, 20
undulata, Say..... 10, 15
Holstonia, Lea..... 15
complanata, Barnes..... 15, 20
deltoidea, Lea..... 10
margaritifera, L..... 10
ochraceus, Say..... 20
rugosa, Barnes..... 15
confragosa, Say..... 20

Monocondylea
Mardinensis, Lea..... 25

Mycetopus
pygmæa, Spx..... 15, 20
siliquosa, D'Orb..... 20

Macoma
nasuta, Con..... 15

Nucula
limatula, Say..... 5

Pandora
trilineatus, Say..... 10, 15

Pecten
æquisulcatus, Cpr..... 15, 20
dislocatus, Say..... 10, 15

Prisodon
truncatus, Schum..... 20, 30

Pholas
dactylus, L..... 25

Sanguinolaria
rugosa, L..... 25

Siliqua
costata, Say..... 15

Tapes
staminea, var diversa Sby..... 15

Tellina
calcarea, Chem..... 5
alternata, Say..... 15
balustina, L..... 20
salmonea, Con..... 10

Triquetra
subviridis, Kl..... 15

Unio
constrictus..... 10, 15
pullatus, Lea..... 15
tumidus, Retz..... 10
lævissimus, Lea..... 10
brevidens, Lea..... 10, 15
Blandingianus, Lea..... 10, 15
Boykinianus, Lea..... 15 to 25
circulus, Lea..... 5, 10
clavus, Lam..... 10, 15
confertus, Lea..... 10
mytiloides, Raf..... 15, 20
Leibii, Lea..... 10, 15
litoralis, Lam..... 15
Requienii, Mich..... 10
brevis, Beck..... 10

The Conchologists' Exchange.

VOL. I. CHESTNUT HILL, PHILADELPHIA, PA., OCTOBER, 1886. No. 4

A PUBLICATION DESIGNED FOR CONCHOLOGISTS AND THEIR INTERESTS.

WM. D. AVERELL,
EDITOR AND PUBLISHER.

Printed by JOHN C. CLARK & SONS, Stationers and Printers, 228 and 230 Dock Street, Philadelphia, Pa.

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Philadelphia, Pa., U. S. A.

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EDITORIAL

One of the finest collecting grounds for the Conchologist to visit is the Panamic Province which comprises the western coast of America from the Gulf of California to Payta in Peru. While many regions more remote base their claims to distinction upon the greater rarity of their specimens, the fact remains that no Province within comparatively easy reach of American collectors possesses so many varieties of mollusks noted for their beauty of form and color as well as for the great numbers in which they are found. The Ocean and Gulf teem with molluscan life, and as if this were not enough the trees bordering the mouths of the rivers have among them numerous species of Arca, Cyrena, Purpura, Auricula, and others, while Littorinæ climb the trees and are found upon their leaves. The total number of sea shells found in this Province is upward of 1,500. Included in this large number are 27 Chitonidæ, 13 Acmæidæ, 18 Fissurellidæ, 64 Trochoidæ, 28 Calyptræidæ, 69 Pyramidellidæ, 59 Buccinidæ, and 90 Muricidæ. Too much praise can not be given to Mr P. P. Carpenter for his faithful labors in behalf of Conchology in this highly favored Province, and a marked evidence of the value of his discoveries may be found in the growing scarcity of his works.

The Messrs. S. O. and H. N. Ridley of the South Kensington Museum, London, in a cruise along the Norwegian coast noticed but few marine mollusks besides great quantities of Littorinæ until Hammerfest was reached, when many varieties of bright colored shells were found. This they found was due to the slight rise of the tide (3 feet) in the southern part of Norway, the Skagerrack coast and the west coast to the south of Bergen. The voyage which lasted eight days extended from Trondhjem to the North Cape and gave the Messrs Ridley much information about the Norwegian tides as well as the marine fauna of the coast. At Hammerfest the tide rose to the height of ten feet, which was ascertained to be the average rise and fall.

Very few American cities of its size take as much interest in Natural History and express the same in the public manner that Milwaukee, Wisconsin does. There a Public Museum has been erected in connection with the Exposition Building; and is maintained by a tax levied upon the citizens who are justly proud of their fine building and enjoy its manifold

advantages. The time will come, and we hope its advent is not far off, when many more cities will take municipal cognizance of the fact that public money can be spent in no better way than in the erection of just such Museums as that possessed by Milwaukee.

Deep-sea soundings continue to be made in the South Pacific but the onus of the work has been borne by American navigators. Since the splendid work of the "Challenger," our government has been apathetic in making investigations in the South Pacific and it is with much interest we await the report of the American vessel "Enterprise," which has lately run a line of deep-sea soundings from Wellington, New Zealand to the Straits of Magellan. The greatest depth reached upon this line was found to be 1,562 fathoms.

United States war vessels will soon survey the Pacific north of the "Challenger's" line, which was 30° south latitude, by lines run at short distances apart. Conchologists will naturally look for many new discoveries in the fauna of this prolific ocean.

We are pleased to learn that the San Diego Society of Natural History has secured an eligible site for its proposed new building.

Very fine shells of Scalaria pretiosa, Lamarck, sold for $500 in the earlier days of this century.

SPECIAL NOTICE.

Owing to the late arrival of foreign correspondence "The Conchologists' Exchange" for October has been somewhat delayed, for which we hope our subscribers will kindly excuse us.

Helix nemoralis in a New Locality.

A remarkable instance of hardihood is furnished in the case of specimens of *Helix, nemoralis* which were found by the Rev. A. H. Delap firmly adhering to the bleak and almost precipitous rock which forms the Great Skellig Island on the Kerry coast. The waters of the Atlantic during storms, dash with great fury up the sides of this rocky island, and have been known to break the ¼-inch plate-glass in the light house which is considerably above the place where *nemoralis* was found, without detaching the shells. No better testimony need be had of the muscular power of the foot of this little mollusk. The Rev. Delap also found *Arion ater, Limax agrestis, Hyalina alliaria, Helix rotundata, Pupa umbilicata, Balea perversa, Clausilia rugosa* and several others not identified, but in localities not so freely exposed to the fury of the sea as that in which *nemoralis* was found.

Notes on the Mollusca of the Bahamas.

By J. J. Brown, M. D.

The American lover of Conchology who intends visiting a tropical region for the first time will find no place equal to the Bahamas. The climate is healthy and comfortable; the thermometer lingering steadily in the vicinity of 80° F. On all the Islands the English language is spoken; the people are hospitable and courteous to the stranger; and the expedition is not expensive. Nassau, the capital city, is easily reached, and the visitor on landing there will find a highly cultivated people, and a good-sized city embowered in a wilderness of tropical vegetation, among which are the bread-fruit, cocoanut, banana, the citrus family, and many other fruits, flowers and trees peculiar to the sunny isles of the southern seas.

New Providence, though a small island, abounds in much that will interest the lover of shells. The first things to attract attention are the large and beautiful Cassides; Cassis cameo, tuberosa and flammea; also the Strombus gigas which in great numbers are offered for sale to the newcomer, together with quantities of the odds and ends of many kinds of shells picked up on the sea-shore, mostly worthless, yet among them now and then some desirable specimens Much of this island is not cultivated and going out of the city we soon come into the "Bush," and here one's enthusiasm receives a fresh impulse on discovering thousands of living Strophia glans which in the winter hibernates and adheres to any available place, and often when there is

a fever it is thickly dotted with them. A few other Strophias peculiar to the Bahamas are found on this island. Helix provisoria is very abundant; also Bulimus sepulchralis, Stenogyra octona, and a goodly number of many other land shells.

The rocky parts of the sea-shore of New Providence abound in specimens of Nerita tessellata, versicolor and peloronta together with Chitons, Patellas, Fissurellas and Littorinas. On the south side of the island there is quite an extent of very shallow sea the bottom of which is covered with sea weed inhabited by numerous crustaceans, echinoderms, Naticas and Cerithiums. Asaphis deflorata and Codakia tigerina are found buried in the sand; while near the shore in brackish water Perna ephippium may be found in masses fastened by its byssus. In fact everywhere, around and on the island are many things of interest.

Adjacent to New Providence are Porcine, Athols, Rose, and some other small islands about which are many beautiful and interesting coral groves, where the Gorgonia, the Pterogorgia, and a whole world of marine animal and plant life flourish in all their glory. Although it would "pay" to visit this part of the Bahamas only, the expedition would be incomplete without going to a number of the other islands such as Abaco, Cat, Andros, Watlins, Exuma, Fortune and Inagua, for each of these islands has something of peculiar interest. Inagua abounds with Strophia alvearia and variety rubicanda. Helix Milleri is found at the Fortune Islands, covering the bushes; Helix salvatoris at Exuma; Helix varians at Rum Key; and at places on Cat Island very fine Strophia mumia and Martensi are met with. Generally speaking what is scarce on one island is very abundant upon another; and the same is true of marine shells.

All the islands are easily visited from Nassau as it is the seat of government; the bulk of the business being transacted there, while vessels are constantly arriving from and departing to the various islands. Each of the Bahama Islands is little more than a mass of coral rock, and their shores are either this naked rock or a beach made up of coral sand. The rocky parts abound with the Chiton, Patella, Fissurella, Nerita, Littorina, etc.; and where the waves are most tumultuous is the home of the Turbo pica, Purpura patula and some others; while the Arca and Fasciolaria choose the more quiet nooks and bays All these can easily be collected in any number; but those that live among the corals and the reefs and out on the bars the collector will often find much difficulty in getting, for they seldom wash ashore in good condition, and they can be gathered only when the water is still; and one may wait in vain for days for such an opportunity.

The large Cassides and Tritons, Dolium galea, Strombus accipitrinus, Turbinella scolymos and others are generally picked up by the spongers and other fishermen to supply the ordinary curiosity hunters who would neither know what an operculum was or care for it, so the fishermen do not save it. Although I have written more than I intended yet only here and there among the many things has a bare mention been made of those that interest collectors; and all these attractions are only a little way down where perpetual summer reigns; where there is everywhere and always spread a most bounteous feast on naked rocks and under the sylvan shades of a glorious glossy green, as well as

> "Deep in the wave is a coral grove
> Where the purple mullet and gold fish rove,
> Where the sea-flower spreads its leaves of blue
> That are never wet with falling dew;
> But in bright and changeful beauty shine
> Far down in the green and glossy brine.
> The floor is of sand like the mountain drift
> And the pearl-shells spangle the flinty snow."

EXCHANGES IN MOLLUSCA.

Exchanges which are merely indirect offers of articles for money will not be accepted.

We will not hold ourselves responsible for any mistakes or disappointments occurring because of bad faith on the part of any of our exchangers

Terms which must be cash with order, are as follows: Exchanges of 20 words including address, 10 cents; for each additional 10 words the charge will be 5 cents. No exchange will be inserted for less than 10 cents.

OFFERED:—300 species Land, Fresh-water and Marine Shells, Pacific Coast and South-western.
WANTED:—Foreign shells and Southern Unios.
C. W. LICHTENTHALER, Bloomington, Ill.

WANTED:—To exchange shells from the rivers, creeks, lakes and sloughs in the vicinity of the mouths of the Missouri and Illinois rivers.
HON. WM. ADAMS, Alton, Ill.

OFFERED:—Liberal exchanges of Cape shells for specimens of Marine and Fresh-water shells from all parts of the world.
MARY GLANVILLE, Grahamstown, So. Africa.

GOOD series of British shells wanted for a small public museum; also many of the rare and local species Limnea, peregra monst sinistrorsum, etc., offered in exchange by S. C. COCKERELL, 5 Priory road, Chiswick, W., England.

OFFERED:—Acmœa patina, pelta, persona, Esch; spectrum, scabra, Nutt.; Lottia gigantea, Gray; Gadinia radiata, Cpr.; Scurria mitra, Esch.; Fissurella volcano, Rve.; Crepidula rugosa, Nutt.; Cerithidea sacrata, Gld.; Calliostoma costatum, Mart.; Chlorostoma funebrale, A. Ad.; brunneum, Phil. Littorina planaxis, Nutt., scutulata, Gld.; Monoceros lapilloides, Con.; Nassa fossata, Gld.; Olivella biplicata, Sby.; Purpura saxicola, Val., canaliculata, Ducl.; Bittium filosum, Gld., Ocinebra circumtexta, Stns.; Acanthopleura scabra, Rve.; Tellina Bodegensis, Hds; Acmœa asmi, Midd.; Machaera patula, Dixon; Macoma nasuta, Con, G. W. MICHAEL, Jr., Morro, Cal.

OFFERED:—British marine shells for Land and Fresh-water shells. Specimens must be best of their kind. Mr. MARSHALL, Sevenoaks, Torquay, Eng.

WANTED:—To correspond with colonial or foreign collectors, with a view to the exchange of shells.
C. L. S., 8 Trinity St., Hastings, England.

Miscellaneous Exchanges for Mollusca.

OFFERED:—California shells, plants radiates and butterflies to exchange for the same.
Mrs. R. W. SUMMERS, San Luis Obispo, Cal.

WANTED:—Shells, sea-mosses, skulls and all kinds of curiosities for my public museums, for Illinois shells, zinc, ores, etc. SEEBACH, Peru, Ill.

WM. CASH, Elmfield Terrace, Halifax, England, wants good shells from all parts of the world. Offered—Natural History specimens in all branches, and scientific books and apparatus.

TERTIARY and other fossils from Southern States and Europe; 50 species of Bird's Eggs; and 60 pounds of Minerals consisting of Amethyst on Agate; Agates rough and polished; Pyromorphite; Native Copper; Zinc blende; Galena; rare Iron Ores, &c., &c., for strictly fine and correctly named Mollusca from South and Central America, Asia, Africa and Australia.
Address W. D. AVERELL,
Chestnut Hill, Philada., Pa.

BOOK EXCHANGE.

OPEN TO ALL SCIENTISTS AT THE SAME RATE AS "EXCHANGES IN MOLLUSCA."

OFFERED:—"A Manual of Zoology," by M. Milne Edwards; "A Manual of Blow-pipe Analysis," by Wm. Elderhurst, M. D.; "Sulphurets," how concentrated, worked and assayed. Wanted—a good copy of "Woodward's Manual of Mollusca" and other works on Conchology.
G. W. MICHAEL, Jr., Morro, Cal.

WANTED:—"Our Common British Fossils and where to find them" in exchange for "Lowe's British Grasses." O. REES, 59 Sandbrook Road, London, England.

OFFERED:—Journal of Conchology for 1883 and 1884 to exchange. What offers?
B. M. O., 7 Cavendish Terrace, Torquay, Eng.

WHAT offers for the "Book of Days" by R. Chambers. H. E., Constable's Tower, Dover, England.

OFFERED:—Woodward's Manual of the Mollusca '75 Edition; Leidy's Memoir of the Extinct Sloth Tribe, N. A.; Lea's Syn. of Family of Naiades, '52 edtn.; Hayes' Descrip. Inf. Max'y Bones of Mastodons, 10 plates; Agassiz & Gould's Comp. Physiology, Bohn's edt'n; Coultas, Prin. Botany, Cryptogamia; Lea's On a Fossil Saurian of the New Red Sandstone Formt'n; Leidy's Geol. sketch of Est. & Fr. Water deposit of Judith R. &c. &c., pres't copy; Meigs' Obs. Rep. Organs of Dolphin; Lesquereux's Cretaceous Flora, 50 plates, Smith'n Mis. Col. Vol. 4, Neuroptera, Vol. 6, Diptera and Coleoptera, 3 pp. out.
WANTED:—First 3 vol. Lea's Obs. Genus. Unio; Say's American Conchology; Goulds Invertebrata of Mass.; Kiener's plates of Shells; Carpenter's works; Tryon's Monog. Terr. Moll. of U. S.; Sowerby's Conch. Manual and Plates; or offers in works on Conchology. W. D. AVERELL,
Chestnut Hill, Phila.

PUBLICATIONS RECEIVED.

1. On Pyrgulopsis, a new genus of rissoid mollusk, with descriptions of two new forms, by R. Ellsworth Call and Harry A. Pilsbry. 2. Description of a new Hydrobia with notes on other Rissoidæ by Harry A. Pilsbry, from H. A. Pilsbry, Davenport, Ia.

Brachiopoda and Lamellibranchiata of the Raritan Clays and Greensand Marls of New Jersey, by Prof. R. P. Whitfield, from Hon. Alfred C. Harmer, M. C.

Geological Survey of Alabama, Bulletin No. 1, Preliminary Report on the Tertiary Fossils of Alabama and Mississippi, by Truman H. Aldrich, M. E., from the author.

Catalogue of Pictou Academy, Pictou, N. S., from Prof. A. H. MacKay, Pictou, N. S.

Catalogues of Public Museum, Milwaukee, from Mr. Carl Doerflinger, Sec'y.

The National Educator, Allentown, Pa., for September and October.

The West American Scientist for September.

1. Melanopsis Fossil e viventi D'Italia; 2. Sopra alcune Scalarie terziarie, from Prof. Dante Pantanelli, Modena, Italy.

1. List of the Fossils of the Upper Silurian Formation of Gotland; 2. Om Gotlands Nutida Mollusker, from Professor Gustaf Lindstrom, Stockholm, Sweden.

NECROLOGY.

Mr. George R. Busk, English surgeon and naturalist is dead; aged 78.

The death is reported of Dr. R. J. Mann, for three years President of the English Meteorological Society.

Mr. Gerrard Kinahan the promising young naturalist and explorer was killed May 23, 1886, at Anyappa, Africa, by a poisoned arrow in the hands of a native.

Dr. Wakley, the well-known editor of the "Lancet" died August 30th, 1886.

The distinguished chemist and author, Professor Barff, is dead at the age of 63.

STRIÆ.

Professor M. Maclay has arrived at Odessa from New Guinea.

"Sandy" Trotter one of Edinburgh's famous teachers is dead.

The Faculty of Brown University are seriously thinking of educating women.

Harvard University will celebrate its 250th anniversary on the 6th, 7th and 8th of November.

M. Chevreul, the French centenarian and scientist, published his first work in 1806 and his latest in 1806.

Miss Ada J. Todd of the Bridgeport High School received the degree of Ph. D. from the Boston University in June last.

Dr. Yates of Santa Barbara, Cal., who has been suffering for some time with a disabled hand is now convalescent.

Professor Faxon, late instructor in Natural Science at Harvard has resigned, and Dr. Ayers will take his class in Zoology and Biology.

Mr. Wm. Landborough the late Australian explorer while in search of Burke and Wills traversed the continent from the Gulf of Carpentaria to Melbourne.

Dr. B. A. Gould, Director of the National Observatory of Cordova in the Argentine Republic, was recently elected a corresponding member of the Vienna Academy of Sciences.

Maurice Thompson will deliver a course of lectures on scientific subjects at Vanderbilt University, Nashville, this winter. These lectures will probably be repeated at other colleges in the South and West.

Professor John Dickinson, a brother of Miss Anna Dickinson the lecturer, and of Miss Susan Dickinson the authoress, has accepted the chair of Geology and Mineralogy and Curator of the Museum in the University of Southern California at Los Angeles.

Professor John Holzinger of Winona, Minn. reports an awakening interest in the study of Conchology among the pupils of his class of 48. We are pleased to note this and hope that many more instructors will kindly report progress to "The Conchologists' Exchange."

The Conchologists' Exchange.

VOL. I. CHESTNUT HILL, PHILADELPHIA, PA., NOVEMBER, 1886. No. 5.

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EDITORIAL.

We are not given to self-adulation but we think that "The Conchologists' Exchange is needed by collectors and that it has accomplished much good in its short life. The progress already made we hope to see continued, but it can only be done by the hearty co-operation of our friends. We wish to largely increase our subscription list so that our little paper will be of more use to you and thus prove a greater source of satisfaction to us. To reach this desirable end we wish each subscriber and reader to kindly become a solicitor, simply to the extent of placing the paper where it will do the most good and saying a kind word for it as occasion offers. It is our desire that each number shall be an improvement upon its predecessor; but as we said before this can only be done by your co-operation. We will be especially thankful for any notes of new discoveries in the malacological field, and we will strive to give all a proper hearing and the fullest credit for their findings It is inevitable that new discoveries will continue to be made in our chosen field of research from now until the end of time, as vast areas have yet to be fully explored and their treasures described; and, again numerous species are rapidly becoming extinct, while others are scarcely known or have never had the light of discovery cast upon them. We trust our young readers will comfort themselves with the fact that the rewards of Fame are not entirely for the savant, as history teaches us that she has benisons in store for her youthful sons as well. There is much in the present number to interest the young and we especially invite them to correspond with us. Valuable articles have been contributed to this number by Mr. C. F. Ancey of Marseilles, France, Mr. H. A. Pilsbry of Davenport, Iowa, and Mr. John Ford of Philadelphia; and we hope to add from time to time such new features as will claim your kind attention and merit your hearty support.

Beginning with the number for January 1887, we propose to increase the subscription price of "The Conchologists' Exchange" and we would suggest therefore that our friends who have not subscribed will take advantage of the present nominal rate and do so without delay.

Diagnoses of a few subgenera in Helicidæ.

By C. F. Ancey, Marseilles, France.

I. Pristina, Anc. (nov. subg. Hyalinæ). "Testa parvula, imperforata, cornea, nitens, "multispirata; spira depresse conica. Aper-"tura interdum lamellis radiantibus subserratis "in palato sitis insignis."

Geog. distribution: Western and Arctic North America.

Types: *Hyalina Stearnsi*, Bland, and *Lansingi*, Bland.

Mr. W. G. Binney put these species, but with doubt, in Microphysæ, while other authors consider them as Hyalinæ; they differ from the latter by anatomic features, and from the former by the form of the shell. Altogether I am inclined to place the group in Hyalinæ, as a series nearly allied to Conulopolita, Boettger (type: *C. Raddei*, Boettg.) I am confident the presence or absence of internal laminæ or tooth-like processes within the aperature of Helices are not generic characters; in some instances they are either present or absent in closely allied species. I established this fact when at work (Le Naturaliste, 1882) on the New Caledonian forms, and I now repeat this my opinion in regard to Pristina, and Gastrodonta In the latter the teeth are frequently absorbed by the animal, when growing larger.

II. Cœlospira, Anc. (nov. subg. Helicis), "Testa solidula, supra concava, late et per-"spectiva umbilicata, discoidea; spiræ anfrac-"tus pauci (4½), sed regulariter crescentes, "ultimus maximus, inflatus, altus, longe ad "apertum fere horizontalem descendens, trans-"verse zonatus. Apertura intusbituberculata, "externe biscrobiculata. Peristoma expansum "basi reflexiusculum."

Geog. distribution: Atlantic coast of Central America, (Chiriqui Lagoon, Costa Rica). Type: *Helix Mac-Neili*, Crosse. This shell bears some external resemblance to Cepolis, (*Helix cepa*) Montf. on account of the colour and the tubercles of the aperture, but it is widely umbilicate, has a concave (not a convex) spire, and strongly deflected body-whorl. It is perhaps more nearly allied to *Systrophia*, a South American group, and particularly to the following section.

III. Angrandiella, Anc. (nov. subg. Helicis). "Testa cornea, brunneo-zonata, de-"pressa, aperte umbilicata; anfractus sat reg-"ulariter crescentes; spira parum elevata, ad "summum depressa. Apertura extus basi "scrobiculata, intus unidentata, obliqua."

Geog. distribution: Andes of Peru. Type: *Helix Angrandi*, Morelet.

IV, Pœcilostola, Anc (nov. subg. Helicis). "Testa tenuiuscula, globose depressa, imper-"forata, luteo-variegata, brunneo. Spira con-"vexa, obtusa; anfractus pauci, rapide cres-"centes, ultimus maximus, inflatus Apertura "transverse oblonga, emarginata, obliqua. "Peristoma alba-incrassatum, tenuiter re-"flexum, haud continum."

Geog. distribution: Andes of Peru. Type: *Helix Farrisi*, Pfeiffer.

Notes on some New Orleans Fresh-Water Shells.

By H. A. Pilsbry, Davenport, Iowa.

Numerous specimens of Physa collected at New Orleans agree perfectly with the descriptions and figures of the *Physa solida* Phil., described from that locality, but show conclusively that that species is synonomous with *heterostropha*, Say. The solidity, inflated form, etc. adduced as specific characters may be paralleled in any large suite of Eastern *P. heterostropha*. It is often elongated, resembling the form known as *pomilia* Con.

I have received from several collectors specimens from New Orleans labelled "*segmentina Wheatleyi*, Lea." The real *Wheatleyi* is not, so far as I know, found at this locality—these shells being referable to the species described by Binney, Tryon and others as *Planorbis havanensis* Pfr.,—and placed in

the typical sections of Planorbis. The species is really a *Segmentina*, but quite distinct from the familiar *armigera* and from *Wheatleyi*.*

Among other species collected by the writer in 1885 are several bleached Helicinas, fairly resembling *H. hanleyana*, Pfr. as figured by Binney. They are probably identical with *orbiculata*, Say, but better material is needed to settle the question. I shall be glad to receive information in regard to this form from collectors who may have met with it.

* Vide. Proc. Davenport Acad. Sciences, Vol. V. p. 43.

A DAY AMONG THE MOLLUSKS.

By John Ford, Philadephia.

On the western border of Narragansett Bay, some twenty miles below the city of Providence, R. I., there is a small body of water known as Greenwich Bay which might be safely termed the paradise of mollusks.

Rocky, muddy and sandy bottoms alternate, while over them all ebbs and flows a tide so pure and crystalline in character that the smallest objects may be readily seen at depths of several feet.

Plentifully scattered over these submerged areas are various species of mollusks, including Pectens, Arcas, Fulgurs, Anomias, Cardiums, Littorinas, Crepidulas, and others of equal interest. Most abundant of all, however, are the edible scallops, *Pecten irradians*, Linn. These are innumerable; hundreds of bushels of them being gathered daily for the benefit of epicures in New York and other cities. Only the contracting muscle is retained but it alone makes a morsel half as large as a man's thumb. Fried in batter, like oysters, a dozen or two of these constitute a dish that may be eaten with pleasure, as the writer has good reason to know.

Here flourishes, also, the "red blood quahaug," *Arca pexata*, Say, one of the few if not the only species of mollusks whose blood contains corpuscles closely allied to those found in man; a fact that was recently demonstrated by the eminent biologist, Prof. John A. Ryder. This species is of southern origin, their presence in Northern waters being due probably to human agency; the eggs or very young having been carried north with oyster plants taken from southern waters for the purpose of bedding.

Arca pexata and adult specimens of *P. irradians* are chiefly found in from one to two fathoms of water, though the young or first season's growth of the latter abound in the shallow places near the shore. Here they may be seen on sunny days with their valves open and the eyes fringing their mantle-edges glistening like so many rubies. They have been well termed "Butterflies of the Ocean" as the slighest disturbance will often cause them to dart away with a sudden erratic movement precisely similar in character to that of their namesakes.

Littorina littorea, Linn, inhabit the rocky boulders that here and there line the shore, while attached to pebbles and other objects, may be seen large numbers of "Saddle Oysters" *Anomia ephippium*, Linn, many of which are quite lustrous and of symmetrical form. *Cardium Mortoni*, Con. are not so plentiful, but careful search among the slightly submerged Algæ is sure to reveal some handsome specimens. As suggested, many other smaller species may be secured as a reward for a few hours spent in the search.

Greenwich station on the line from Stonington to Providence is within a stone's throw of the bay, and I can safely assure the student that a visit there, when the tide is out, will be remembered as one of the happiest of his life; especially if accompanied by my good friend, Mr. Horace F. Carpenter, author of the "Shell-Bearing Mollusca of Rhode Island", whose ability to find and capture minute species is a standing wonder to all less practical observers.

NEW LOCALITIES.

Ed. Conchologists' Exchange, Sir:—You can publish under "New Localities," *Unio parvus*, Barnes found at Shipp's Lake, Bastrop Co, and Colorado River, Austin, Texas; and *Unio gracilis*, Barnes found in Colorado River, Austin, Texas. I have nowhere seen these species published as occurring in those localities. *Parvus* is I think new to the State.

J. A. Singley, Giddings, Tex

Mr. John Ford of Phila. found specimens of Modiola tulipa, Lam. at both Anglesea and Cape May, N. J. in May 1886. This shell is not recorded as having been found north of South Carolina before.

NECROLOGY.

M. Bonley, President of the French Academy of Sciences, died November 20, 1886

M. Rabuteau for twenty years a member of the French Biological Society is deceased.

Captain Mangin, the inventor of the system of Optical Telegraphy now in use in the French Army, is dead of appoplexy at the age of 45.

Dr. Thomas Andrews, F. R. S., the well-known Professor of Chemistry in Queen's College, Belfast, is reported as deceased at the advanced age of 71.

EXCHANGES IN MOLLUSCA.

Exchanges which are merely indirect offers of articles for money will not be accepted.

We will not hold ourselves responsible for any mistakes or disappointments occurring because of bad faith on the part of any of our exchangers

Terms which must be cash with order, are as follows: Exchanges of 20 words including address, 10 cents; for each additional 10 words the charge will be 5 cents. No exchange will be inserted for less than 10 cents.

OFFERED—Goniobasis, comalensis, pleurostriatus; Helix auriformis, texasiana, febigeri, mooreana, berlandieriana, espiloca; Helicina tropica, occulta; Bulimulus schiedianus, mooreanus; Gundlachia, Pyrgulopsis, Tryonia, etc., for fresh-water shells.
H. A. PILSBRY, Davenport, Iowa.

WANTED:—To exchange shells from the rivers, creeks, lakes and sloughs in the vicinity of the mouths of the Missouri and Illinois rivers.
Hon. WM. McADAMS, Alton, Ills.

FLORIDA shells, Land and Marine, for exchange.
M. A. Mitchell, Waldo, Fla.

OFFERED:—Helix cingulata, colubrina, fortens, var. albina, Gobantzi and others.
WANTED:—North American Land shells.
ALEX. VON TIESENHAUSEN,
Bozen, Tyrol, Austria.

WANTED:—Batches of Helices nemoralis and hortensis alive or dead.
OFFERED:—Unio Margaritifer and others.
B. HUDSON, M, C. S.
5 Westbourne Grove, Coatham, Redcar, England.

FOR EXCHANGE:—Rare land shells from Ceylon; also new species of Bulimus from Mt. Roraima. Offers solicited. Miss LINTER,
Arragon Close, Twickenham, England.

OFFERED:—Unio Margaritifer, By. tentaculata. P. complanatus, H. nemoralis, hortensis and cricetorum.
WANTED:—U. pictorum, L. auricularia, H. revelata, pisana, obvoluta, B. montanus, C. Rolphii, biplicata, Cy. elegans and others.
T. A. LOFTHOUSE,
67 Grange Road, Middlesboro, Eng.

WANTED:—Correspondents for the purpose of exchanging Land and Marine shells of any province. Over 150 West Coast species offered for anything new to me. HARRY E. DORE,
122 Front St., Portland, On.

NUMEROUS duplicates of European Land, Fresh-water and Marine shells to exchange for American Land and Fresh-water shells. C. F. ANCEY,
Marseilles, France.

OFFERED:—British marine shells for Land and Fresh-water shells. Specimens must be best of their kind. Mr. MARSHALL, Sevenoaks, Torquay, Eng.

WANTED:—To correspond with colonial or foreign collectors, with a view to the exchange of shells
C. L. S., 8 Trinity St., Hastings, England.

Miscellaneous Exchanges for Mollusca.

A fine lot of Fossil Ferns from Mazon Creek, Grundy Co., Ills., properly named, to exchange for Marine shells from the Southern Seas.
J. E. CARR, Morris, Ills.

TERTIARY fossils from Italy and other European States to exchange for American Land and Fresh-water shells. Dr. FRANCESCO COPPI, Modena, Italy.

WANTED:—British and Foreign shells.
OFFERED:—Good Foreign stamps.
THOS. W. READER,
171 Hemingford Road, London, N.

TERTIARY and other fossils from Southern States and Europe; 50 species of Bird's Eggs; and 60 pounds of Minerals consisting of Amethyst on Agate; Agates rough and polished: Pyromorphite; Native Copper; Zinc blende; Galena; rare Iron Ores, &c., &c., for strictly fine and correctly named Mollusca from South and Central America, Asia, Africa, and Australia.
Addresss W. D. AVERELL,
Chestnut Hill, Philada., Pa.

BOOK EXCHANGE.

OPEN TO ALL SCIENTISTS AT THE SAME RATE AS "EXCHANGES IN MOLLUSCA."

OFFERED:—Woodward's Manual of the Mollusca '75 Edition; Leidy's Memoir of the Extinct Sloth Tribe, N. A.; Lea's Syn. of Family of Naiades, '52 edtn; Hayes' Descrip. Inf. Max'y Bones of Mastodons, 10 plates; Agassiz & Gould's Comp. Physiology, Bohn's edt'n; Coultas, Prin. Botany, Cryptogamia; Lea's on a Fossil Saurian of the New Red Sandstone Formt'n; Leidy's Geol. sketch of Est. & Fr. Water deposit of Judith R. &c. &c., pres't copy; Meigs' Obs. Rep. Organs of Dolphin; Lesquereux's Cretaceous Flora, 50 plates, Smith'n Mis. Col. Vol. 4, Neuroptera, Vol. 6 Diptera and Coleoptera, 3 pp. out.

WANTED: First 3 vol. Lea's Obs. Genus. Unio; Say's American Conchology; Goulds Invertebrata of Mass.; Kiener's plates of Shells; Carpenter's works; Tryon's Monog. Terr. Moll. of U. S.; Sowerby's Conch. Manual and Plates; for offers in works on Conchology.

W. D. AVERELL,
Chestnut Hill, Phila.

IMPORTANT!

By devoting part of your leisure time to forming "Clubs" of subscribers to "The Conchologists' Exchange," you can secure for yourself the following advantages:—

OFFER No. 1.—90 cents in cash and the names of five subscribers, will secure to you a free subscription to the "Exchange," and shells to the value of 50 cents from a SPECIAL LIST OF MOLLUSCA which will be sent on application.

OFFER No. 2.—$1.65 in cash and names of ten subscribers, will secure you a free subscription and $1.00 worth of shells.

OFFER No. 3.—$3 in cash and twenty names will secure you a free subscription and $2 00 worth of shells. These shells will be post-paid in all cases.

We propose to hold these "offers" open until January 15th, 1887, and we hope they will have the effect intended, i. e. a renewed interest in the study of Conchology.

Alphabetical List of Shells received since the issue of Price List of Mollusca No. 3; sold under same conditions.

TERMS:—Cash with order. Express charges to be borne by purchasers in all cases.

NOTE:—A discount of 10 per cent. payable in shells at List prices, will be allowed on all orders of $5 and upwards accompanied with the "cash." This discount applies to "Price List of Mollusca, No. 2," and all subsequent Lists until further notice.

UNIVALVES

Bittium
filosum..... 5, 10

Cerithium
citrinum, Sby..... 10, 15
columna, Sby..... 15

Cerithidea
decollata, L..... 10, 15

Coralliophea
neritoidea, Chem..... 15, 20

Drillia
Barclayensis, A. Ad..... 10, 15

Eulima
tortuosa, Lam..... 15, 20

Lunatia
Lewisii, Gld..... 25, 35

Melania
amarula, Lam..... 20

Monoceros
lapilloides, Con..... 10, 15

Neritina
longispina, Lam..... 20, 25

Neritopsis
radula, L.....10 to 20

Paludina
zonata, Han..... 10, 15

Pisania
undosum, L.....20 to 35

Pleurotoma
cincta, Lam..... 10
abbreviata, Lam..... 10, 15
clavus, Rve..... 10

Triton
rubecula, Lam.....15 to 30

BIVALVES

Machæra
patula, Dixon..... 20, 25

Macoma
inconspicua, Sby..... 10, 15
nasuta, Con..... 15, 20
inquinata, Desh..... 15, 20

Mytilus
Californianus, Con..... 20, 40
hamatus, Say..... 10, 15
cubitus, Say..... 5, 10
bifurcatus, Rve..... 15, 20

Tapes
staminea, Con..... 20, 25

Tellina
Bodegensis, Hds..... 20, 30

The Conchologists' Exchange.

VOL. I. CHESTNUT HILL, PHILADELPHIA, PA., DECEMBER, 1886. No. 6.

A PUBLICATION DESIGNED FOR CONCHOLOGISTS AND THEIR INTERESTS.

WM. D. AVERELL,
EDITOR AND PUBLISHER.

Printed by JOHN C. CLARK & SONS, Stationers and Printers, 228 and 230 Dock Street, Philadelphia, Pa.

Correspondence upon Conchology, as well as reliable items of interest concerning the Mollusca, their habits, localities, etc., kindly solicited from all.

Matter for publication must be received by the 20th of each month.

TERMS:

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WM. D. AVERELL,
Chestnut Hill,
Philadelphia, Pa., U. S. A.

Advertising Rates given on application.

EDITORIAL.

Science was called away from her busy researches on the 8th of December, 1886, to mourn the death of one of her noblest and most conscientious workers. We refer to Isaac Lea, LL. D., of Philadelphia, the eminent conchologist, whose demise, at the ripe age of ninety-five, has been a source of mourning to all scientists and the general public. This nation was in its infancy when Isaac Lea first saw the light of day and he has lived to see the Government on a solid basis and the country in general benefitted by his life and labors. Mr. Lea was born in Wilmington, Delaware, March 4th, 1792. His ancestors, John and Hannah Lea, came with William Penn from England and were noted as ministers in the Society of Friends. His father, James Lea, intended Isaac for the medical profession, but meeting the late Professor Vanuxem, then a youthful and very ardent scientist, the whole course of young Lea's life was changed, and together they collected minerals and visited the newly-opened coal mines near Wilkes-Barre, Pa.

Mr. Lea became an active member of the Academy of Natural Sciences in 1815, and contributed his collection to it. His first paper, "An Account of the Minerals at present known to exist in the vicinity of Philadelphia," was published in the Journal of the Academy in 1817. It was not until 1827, when the deepening of the channel of the Ohio River, and the sending of many species of shells of the Genus *Unio* to the Academy, gave rise to those investigations which resulted in the publication of his "Observations of the Genus Unio," which we regard as the crowning triumph of his long and useful life. Mr. Lea visited Europe in 1832. In 1833 he published "Contributions to Geology." His second visit to Europe was made in 1852, and on his return he published "On a Fossil Saurian of the New Red Sandstone Formation of Pennsylvania. He read in all one hundred and fifty-seven papers before learned societies and was honored by degrees and honorary memberships from no less than twenty-five of the most prominent Universities and scientific associations of the world. What more can we add except that Isaac Lea helped us exceedingly well, and by his noble work on the

Unionidæ straightened what, but for him, would be a very crooked path. He has well earned his rest.

We regret that "Random Notes on Natural History," has been discontinued with the number for December, and sincerely trust that some arrangement may be made whereby it shall again make its appearance. No good can come from the stoppage of so useful a journal, but much harm to the young whose minds must be directed to scientific reading as one of the cures for the harmful and trashy literature of the day. Mr. H. F. Carpenter's interesting series of articles on the "Shell Bearing Mollusca of Rhode Island," is temporarily stopped by the discontinuance of this valuable publication.

Whoever secures the rare and valuable work by Kiener, published in another column, will have a masterpiece of art in descriptive Conchology. Although the text is in French, the plates, of which there are several hundred, are strikingly natural and not too highly colored as is often the case with works of this character. The attention of Universities and Scientific Societies is respectfully solicited.

By request we extend the time for making up "Clubs" at the former subscription price, until February 15th, 1887. Beginning with February number the price of subscription to "The Conchologists' Exchange" will be 35 cents per annum; to foreign countries, 50 cents. This arrangement will continue until the commencement of Volume II.

CORRESPONDENCE.

Ed. Conchologists' Exchange, Sir:—In the last issue of the Exchange, I note that Mr. Ancey has established a new group, *Pristina* for the western Helices *Zonites lansingi*, Bld. *Zonites stearnsi*, Bld. It has long been my opinion that these species cannot be included in either Zonites (including *Conulus* and *Gastrodonta*) or *Microphysa*, which should be regarded as a synonym of Hyalina as Dall has shown. I agree with Mr. Ancey in separating them as a distinct group near Zonites, characterized by the combination of aculeate marginal teeth with ribbed jaw and conulus-like shell. Unfortunately the proposed name *Pristina* is preoccupied (in Vermes, 1831), and I suggest that the group be called *Anceyia* in honor of the eminent conchologist C. F. Ancey. Of the other names proposed, *Cælospira* has been used by Hall in *Brachiopoda*, and *Pœcilostola* is thrice preoccupied, having been used in a generic sense in *Diptera*, *Hemiptera and Coleoptera*. Students of our land shells would do well to carefully weigh a very suggestive paragraph by Dall regarding the status of the numerous subgenera of Helix, in Proc. Nat. Mus. 1885, p. 267 and 271, in this connection.

Harry A. Pilsbry.

Ed. Conchologists' Exchange, Sir:—Referring to your "Answer to Correspondents" in No. 3 replying to Amateur about *Helicina subtropica*, you say it is not described in Binney's L. and F. W. shells. I am probably the one who is responsible for sending out this species. Prof. R. E. Call says "The name *sub-tropica* has long since been dropped as being synonymous with *Helicina orbiculata*. So it appears that *sub-tropica* was the original name. J. A. Singley, Giddings, Texas.

Ed. Conchologists' Exchange, Sir:—In regard to *Unio Liebii*, I would say that I find them in rather shallow water, on gravelly and pebbly bottoms, where the waves are constantly washing over them, which must necessarily decorticate or erode the shells more or less. Such I find is the case with the half dozen or more species of Unionidæ found in the same situation. The best time to secure them is after a heavy west wind which causes the waters of the lake (Erie), to recede so that they are left bare on the beach.

Jerome Trombley, Petersburgh, Mich.

Editor Conchologists' Exchange,

Sir:—I am sorry to hear that the publication of Random Notes on Natural History ends with the present (December) number. Though small in size it was one of the best magazines of the kind in the country. By its "untimely taking off" several valuable contributions to science that have been running in it for years will remain unfinished for the present at least.

Among these is the "Shell-bearing Mollusca of Rhode Island," a work of great merit by Mr. Horace F. Carpenter of Providence, a gentleman whose superior powers of observation have been clearly shown in the chapters already published. Mr. Carpenter should complete the work and issue it in book form.

John Ford.

NEW LOCALITIES.

Ed. Conchologists' Exchange, Sir:—Your request for notes on shells during my collecting tour induces me to say that in dredging for *Unionidæ* in the St. John's River nearly west of this place I found *Mytilopsis leucophæta* Con. This little bivalve belonging to the sea or to brackish waters was here found about two hundred miles from the mouth of the river and in water entirely fresh. It was attached by its byssus to various Unios The Unios collected were *Unio anthonyi*, Lea, *jayanus*, Lea, *monroensis*, Lea, *coruscus*, Gld., *buddianus*, Lea, *lepidus*, Gld., *aheneus*, Lea; *buckleyi*, Lea, *Anodonta gibbosa*, Say, and *couperiana*, Lea. S. Hart Wright, Lake Helen, Fla. December 6th, 1886.

Ed. Conchologists' Exchange, Sir:—Your favor is at hand. Since writing to you before I have found *Unio fuscatus*, Lea, in Lake Dias, and *Unio paludicolus*, Gould, in Lake Ashby, where it is over one hundred miles north of the Everglades, the original station. You might add these to the list formerly sent.

S. Hart Wright, Lake Helen, Fla., December, 21st., 1886.

STRIÆ.

At the annual meeting of the members of the Academy of Natural Sciences. Dec. 28th, 1886, the following officers were elected: President, Joseph Leidy; Vice-Presidents, Thomas Meehan, Rev. Dr. Henry McCook; Recording Secretary, Edward J. Nolan; Corresponding Secretary, George H. Horn; Treasurer, William C. Henszey; Librarian, Edward J. Nolan; Curators, Joseph Leidy, Jacob Binder, W S. W. Rushenberger, Angelo Heilprin; Councilors, George Y. Shoemaker, Aubrey H. Smith, George A. Koenig, George A. Rex; Finance Committee, Isaac C. Martindale, Aubrey H. Smith, S. Fisher Corlies, George Y. Shoemaker, William W. Jeffries.

It is not generally known that Prof. R. B. Minton, of Carlinville, Ill., has presented to Blackburn University a fine observatory containing one of the best telescopes in the State. He has been Professor of Mathematics there for twenty-five years.

Professor Francis Kendall, of Crete, Neb., was one of the passengers on the ill-fated Baltimore and Ohio train which met with the terrible accident near Tiffin, Ohio. The Professor escaped injury and was one of the foremost in helping the injured.

Ernst Plotz, the noted German collector of butterflies, made an illustrated catalogue of his specimens with his own brush and pencil. When he died he had completed ten volumes containing over 10,000 pictures.

Dr. Alfred R. Wallace, the noted British naturalist has been delivering a course of lectures in Philadelphia, Boston and other cities.

Ex-President Noah Porter, of Yale, received the degree of LL. D. from the University of Edinburgh on his recent visit there.

Professor Joseph Leidy was elected an honorary member of the American Society of Naturalists at their late annual meeting in Philadelphia.

The late Hon. Eli K. Price, of Philadelphia, the eminent lawyer, found time to be an active and valuable member of various scientific and literary societies.

Dr. S. Hart Wright is making numerous conchological discoveries in Florida, as his letters in another column will show.

Mr. C. T. Simpson, of Ogalalla, Neb., has just finished a catalogue of the Mollusca of Florida and adjacent keys.

NECROLOGY.

Isaac Lea, LL. D. author of "Observations of the Genus Unio," "Contributions to Geology" and numerous other scientific publications, died at his residence, 1622 Locust Street, Philadelphia, at 10 A. M., December 8, 1886, after a short illness complicated by weaknesses natural to old age. Mr. Lea was born March 4th, 1792, in Wilmington, Del. He was the President of "The Academy of Natural Sciences of Philadelphia" from 1853 to 1858, and also Vice-President of "The American Philosophical Society" for several years. His body rests in Laurel Hill Cemetery, Philadelphia.

Prof. H. H. Straight, biologist and formerly principal of the State Normal School at Normal, Ills., died at Pasadena, Cal., November 19, 1886.

Kendrick Stillman Smith, Oologist, born at Bellville, Ills., January 24, 1869, died in San Diego, Cal., November 6, 1886

Professor J. N. Madvig, the great Danish scholar is reported dead at the age of 82

PUBLICATIONS RECEIVED.

Catalogues of Fossils, Shells and Minerals in Dr. L. G. Gates' collection, Santa Barbara, Cal.

Bulletins of the American Museum of Natural History, Central Park, N. Y.; Vol. 1, Nos 1 to 7, from A. Woodward, Librarian.

Elephant Pipes and Inscribed Tablets in the Museum of the Academy of Natural Sciences, Davenport, Ia., by Chas. E. Putnam, Prest., from H. A. Pilsbry.

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H. A. PILSBRY, Davenport, Iowa.

OFFERED:—Trivia Californica, Gray; Crepidula navacelloides, Nutt., adunca, Sby. Mopalia muscora, Gld., Stenoradsia magdalensis, Rve., Tonicella lineata, Wood, Lepidopleurus Cooperi, Cpr. Trachydermon pseudodentiens, Cpr. Haliotis Cracherodi, Leach, rufescens, Swains; Mytilus Californianus, Con.; Pachydesma crassatelloides, Con.; Tapes staminea, Con.; Schizotheurus Nuttallii, Con; Saxodomus Nuttallii, Con; Zirphœa crispata, L. Helix Traskii, Nwc; Physa politissima, Tryon; for wants in Mollusca.
GEO. W. MICHAEL, Jr., Morro Bay, Cal.

FOR EXCHANGE:—Rare land shells from Ceylon; also new species of Bulimus from Mt. Roraima. Offers solicited. Miss LINTER,
Arragon Close, Twickenham, England

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Marseilles, France.

Miscellaneous Exchanges for Mollusca.

OFFERED:—Florida Moss, Woods, Palmetto, alligator teeth, wild boar tusks, etc., for foreign shells, curios, etc. C. F. SULZNER, Palatka, Fla.

OFFERED: 500 Indian arrow heads for sea shells. Only fine ones desired. CASPER LOUCKS,
York, Pa.

WANTED:—Shells, books, &c, in exchange for botanical specimens, minerals, fossils, books, &c. Lists free. JAMES GALEN, Rawlinsville, Penna.

WANTED:—Emu and Cassowary eggs in exchange for named shells. EDW. FERGUSON,
138 Wilson St., Brooklyn, N. Y.

TERTIARY and other fossils from Southern States and Europe; 50 species of Bird's Eggs; and 60 pounds of Minerals consisting of Amethyst on Agate; Agates rough and polished: Pyromorphite; Native Copper; Zinc blende; Galena; rare Iron Ores, &c., &c., for strictly fine and correctly named Mollusca from South and Central America, Asia, Africa, and Australia.

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Chestnut Hill, Phila.

OFFERED:—"A Manual of Zoology," by M. Milne Edwards; "A Manual of Blow-pipe Analysis," by Wm Elderhurst, M. D; "Sulphurets," how concentrated, worked and assayed. Wanted—a good copy of "Woodwards Manual of Mollusca" and other works on Conchology.

G. W. MICHAEL, Jr., Morro, Cal.

WANTED:—Tryon, American Marine Conchology, colored edition. Offered—Sowerby, Veneridæ: Knorr, Hoorns en Schulzen. M. M. SCHEPMAN,
Rhoon, near Rotterdam, Holand.

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OFFER No. 3.—$3 in cash and twenty names will secure you a free subscription and $2 00 worth of shells. These shells will be post-paid in all cases.

By request we hold these liberal offers open until February 15th, 1887, by which time we hope those raising Clubs will have completed their lists and secured the fine shells in reserve for them.

Alphabetical List of Shells received since the issue of Conchologists' Exchange No. 5.

TERMS:—Cash with order. Express charges to be borne by purchasers in all cases.

NOTE:—A discount of 10 per cent. payable in shells at List prices, will be allowed on all orders of $5 and upwards accompanied with the "cash." This discount applies to "Price List of Mollusca, No. 2," and all subsequent Lists until further notice.

UNIVALVES

Aplysia
virescens, Risso..... 10

Amphipeplea
glutinosa, Mull..... 10, 15

Carinifex
Newberryi, Lea..... 5, 10

Cerithium
rupestris, Phil..... 10, 15

Chiton
fascicularis, L..... 10

Chondrus
quatridens, Mull. var. minor, 3, 5

Fluminicola
virens, Lea..... 3, 5
Nuttalliana, Lea..... 5, 10
seminalis, Hds..... 5

Gibbula
Adriatica, Phil..... 5, 10
Richardi, Payr..... 5, 10
Lessoni, Payr..... 10, 15
rarilineata, Mich..... 10, 15

Goniobasis
Draytoni, Lea..... 5, 10
occata, Hds..... 10
Shastaensis, Lea..... 5, 10

Haminea
vesicula, Gld..... 15, 20

Helisoma
occidentalis, Cpr..... 5, 10

Limnophysa
elodes, Say..... 3, 5
desidiosa, Say..... 5
bulimoides, Lea..... 5

Littorina
scutulata, Gld..... 3, 5

Melampus
olivaceus, Cpr..... 5

Monodonta
articulata, Payr..... 15, 20

Neritina
thermalis, Boul..... 5

Nassa
tegula, Rve..... 5

Patella
Bonardi, Payr..... 20

Pupa
bigorrensis, Ch. var elongata. 3, 5
Micheli, Tower..... 5
Vergennesiana, Charp 10
Dupuyi, West..... 25

Physa
Traskii, Lea.....3 to 10
Gabbii, Tryon..... 5, 10
diaphana, Tryon..... 3, 5

Pomatias
obscurus, Drap..... 10

Rissoa
labiosa, Ad..... 3

Trochus
Racketti, Mont..... 5, 10

Tryonia
protea, Gld..... 3, 5

Truncatella
Californica, Pfr..... 2, 3

Trochonannina
pericarinata, v. Mart. (L. Nyassa) 25

Rissoina
Brugieri, Payr..... 3, 5

Valvata
virens, Tryon..... 5

BIVALVES

Arca pulchella, Rve..... 10
Cardium paucicostatum Sby. 20, 30
do. papillosum, Poli..... 15
Liocardium substriatum, Con. 10, 15
Macoma inquinata, Desh..... 15, 20
Pecten monotimeris, Con.....15 to 25
Psammobia vespertina L..... 20
Solemya, mediterranea Lam..15 to 25
Tapes Bendanti, Payr.....15 to 25
Tellina nitida, Poli..... 15
Terebratula vitrea Bru. var. minor, Scacchi..... 15, 20
Thecidium mediterraneum, Risso. 10
Unio falsus, Brgt..... 25

The Conchologists' Exchange

VOL. I CHESTNUT HILL, PHILADELPHIA, PA., JANUARY, 1887 No. 7

A Publication Designed for Conchologists and Scientists generally

WM. D. AVERELL

EDITOR AND PUBLISHER

☞ Correspondence upon Conchology, as well as reliable items of interest concerning the Mollusca, their habits, localities, etc., kindly solicited from all.

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WM. D. AVERELL,
Editor and Publisher
Chestnut Hill
Philadelphia, Pa., U. S. A.

THE CONCHOLOGISTS' EXCHANGE is later than usual this month owing to changes looking towards its improvement, typographically and otherwise. As our constant aim is to improve our little paper in all departments we hope our readers will kindly excuse the delay in issuing this number. The number for February promises to be exceptionally interesting, as several new features will be added. Our young friends will be remembered, and a column devoted to information for their use in collecting shells. They are cordially invited to correspond with us in regard to their collecting trips and to make this "Young Collector's Corner" cheerful and sociable. We hope to include in February number a highly interesting serial article on "The Shell-bearing Mollusca of Mercer County, Illinois," by Mr. Wm. A. Marsh, of Aledo, Illinois, whose conscientious labors in behalf of science are so well-known and valued, together with a more general attention to scientific information, new discoveries, reports of societies, etc. We look forward to the future confident of success and sincerely trust you will hail our coming with a cheery welcome.

A VAST stride towards scientific success has been made in the Australasian colonies by the project, now well under way, of uniting all the scientific societies in the colonies in one grand society to be known as "The Australasian Association for the Advancement of Science." As there are some twenty societies in the colonies with a membership of upwards of 3,000 the scheme will not lack for material, while the countries especially interested, as well as the world in general, will be highly benefited. Advantage has been taken of the centennial anniversary of the foundation of the colonies to further the enterprise.

HEREAFTER "THE CONCHOLOGISTS' EXCHANGE" will be issued not later than the 25th of each month, and we sincerely hope that all communications will be sent so as to be received *not later than the 20th of each month*, to secure prompt publication.

SUBSCRIBERS will please note that the price of "The Exchange," has been increased to thirty-five cents per annum, and 50 cents to foreign countries. Those who subscribe prior to the 15th of February will have the benefit of the 25-cent rate.

THE STRENGTH OF SNAILS

PERCEIVING a common snail, *Helix aspersa*, crawling up the window blind one evening, it occurred to me to try what it could draw up perpendicularly. Accordingly, I attached to its shell four reels of cotton, fastening one after the other until I ascertained that a greater load would exceed the limit of its strength. I then weighed the entire load and found that it weighed 2¼ ounces while the snail weighed only ¼ ounce. Thus it was able to lift perpendicularly nine times its weight. I then made an experiment with a larger snail weighing one-third ounce, the load being composed chiefly of the same material as the last but so placed as to be drawn in a horizontal position on the table. Reels of cotton to the number of twelve were fastened to it, with a pair of scissors, a screw driver, a key and a knife, weighing altogether seventeen ounces, or fifty times the weight of the snail. The same snail when placed on the ceiling was able to travel with a weight of four ounces suspended from its shell. I next tried it on a piece of common thread suspended and hanging loose with another snail of its own weight which it carried up the thread with apparent ease. After this I tried it on a single horse hair strained in a horizontal position, but it had then enough to do to crawl over this narrow bridge without a load. [E. Sandford, The Gardens, Dale Park, Arundel, Eng. in Zoologist for December.]

RARE CYPRÆAS

IT will be of interest to our readers to have before them a list of the rarer Cypræas, partial it is true, but still valuable to collectors of this beautiful and interesting genus.

CYPRÆA

aurantia, Mtn
Barclayi, Reeve
bicallosa, Gray
Bregeriana, Crosse
Broderipii, Gray
candida, Pease
castanea, Higgins
chrysalis, Kiener
chrysostoma, Kiener
clara, Gaskoin
coffea, Gray
compta, Pease
contaminata, Gray
Crossei, Marie
fusco-maculata, Pease
gemmula, Weinkauff
Goodalii, Gray
gracilis, Gaskoin
guttata, Rumphius
helenæ, Roberts
Jenningsiana, Perry
lentiginosa, Gray
leucodon, Broderip
leucostoma, Gray
marginata, Gaskoin
Menkena, Deshayes
notata, Gill
pardalina, Dunker
parvula, Philippi
Peasei, Gaskoin
petitiana, Crosse and Fisher
pulchella, Swainson
Reevei, Gray
Sauliæ, Gaskoin
Semiplota, Mighels
testudinaria, Linnæus
umbilicata, Sowerby
valentia, Perry

EROSION OF FRESH-WATER SHELLS

MR. George W. Shrubsole (Journal of Conchology, V, 66, 1886) has some notes on erosion of fresh-water shells. He noticed that in specimens of *Planorbis* living in the Trent Canal, the shell was entire, but after being kept for three months in water from the River Dee, considerable erosion had taken place. This suggested that the character of the water might have a prominent place in the erosion, and analysis showed that the water of the Trent Canal contained about three times as much lime in solution as that from the River Dee. The fact that erosion did not set in at once is explained by the existence of the epidermis.—American Naturalist for December, 1886.

THE VITALITY OF MOLLUSCA

PROF. Angelo Heilprin is the authority for a remarkable case of vitality observed among certain members of the fauna of the New Jersey Coast. Specimens of *Nassa obsoleta*, Say, collected by Miss Emma Walter at Atlantic City in June, 1885, and retained dry during the entire year of their accidental captivity, were stated to be still alive, although subjected for several months to the abnormal temperature occasioned by proximity to a heated wall surface. This, the Professor contended, was perhaps the most extraordinary instance of abnormal vitality known among the marine mollusca, although among the terrestrial and fresh-water forms, especially among those which undergo a partial hibernation, longer periods of semi-adaptation to imposed conditions have been noted. Instances of such survivals were cited by Professor Heilprin and Professor Leidy.—[Proc. Acad. of Natural Sciences, Philadelphia, June, 1886.]

NEW LOCALITIES

Editor Conchologists' Exchange, Sir: *Limnæa* gracilis is found in La Belle Lake, Waukesha Co., Wis. Mrs. H. F. Henshall, Cynthiana, Ky.

STRIÆ

Professor Leidy has named a new annelid *Lumbricus glacialis*.

Dr. H. D. Valin, of Chicago, is the Editor of a new periodical, "The American Journal of Biology."

Professor J. T. Rothrock, of Philadelphia, is reported as about to visit Europe in search of needed rest.

Mr. William B Marshall is Professor Tryon's capable assistant in his conchological labors.

Professor Agassiz found scarcely a score of Helix Brasiliensis on his last visit to South America.

Dr. Muller of Austria, has been making some extremely valuable observations on the action of the stomach upon fungi.

Professor Alpheus Hyatt read a paper on the "Primitive forms of Cephalopoda" before the National Academy of Sciences, at its meeting November 10, 1886.

Professor H. L. Osborne becomes the Editor of "The American Monthly Microscopical Journal" during the absence of Mr Hitchcock in Japan.

Ex-President White, of Cornell, has lately donated his library of 30,000 volumes and 10,000 pamphlets, valued at $100,000 to the University.

W. Topley, F. G. S., delivered an address on "The Erosion of the Coasts of England and Wales" before the Geological Association of England, November 5, 1886.

Miss Graceanna Lewis, of Germantown, Philadelphia, intends delivering a course of scientific lectures throughout the country. Miss Lewis is a sister of Professor H. Carvill Lewis, the noted Geologist.

Dr. C. A. White has lately discovered the following new Cretaceous fossils: Trochus (Oxystele), euryostomus; Cerithium Pillingi; Cerithium Totium Sanctorum; Solarium Wallalense and Nerita Californiensis.

Dr. C. W. Kimmins has delivered a very important lecture before the Ley's Natural History Society on "The Discovery of Human Bones, Pottery, etc., at Hauxton Mills, near Cambridge, Eng." The skulls are neolithic and Dr. Kimmins is of the opinion that this find proves that neolithic men must have lived on into historic times.

THE noted American Naturalist, Professor J. H. Ryder, makes the following capital suggestions—"Structures that are disappearing should be called vestiges. Structures which are still imperfect but are appearing ought to be called rudiments."

NECROLOGY

Carl Oscar Hamnstrom, Swedish botanist, died July 5, 1886.

Dr. Charles Robert Bree, British ornithologist, died October 17, 1886.

Mr. J. S. Harrison, microscopist, died October 6, 1886. at Malton, England.

Paul Bert, physiologist, died last November in the 54th year of his age.

The death of Rev. W. Downs, F. G. S. the distinguished geologist and botanist, is announced.

The death of Dr. Joseph G. Richardson of Philadelphia, an eminent microscopist is announced; aged 51 years.

ANSWERS TO CORRESPONDENTS

W., Toledo, O. Your supposition that Jan was a Swiss writer is correct.

S. C. Tritiaria is a fossil genus occurring in the Miocene formation, Virginia. The specimen sent was of recent origin.

J. A. B. Ceylon would be a possible locality for your specimens as they both hail from India, East Indies, etc. Pyrosus should be Pyrazus.

Halia. The genus Halia is a synonym for Buccinum and was adopted by MacGillivray. Please consult a standard work for answers to your other questions.

PUBLICATIONS RECEIVED

The American Monthly Microscopical Journal—The West America Scientist—The Canadian Entomologist—The Microscopal Bulletin and Science News—The National Educator.

Bulletin of American Museum of Natural History. Vol. 1, No. 8, from A Woodward, Librarian.

Exchange Column

Exchanges which are merely indirect offers of articles for money, will not be accepted.

We will not hold ourselves responsible for any mistakes or disappointments occurring because of bad faith on the part of any of our exchangers.

Terms, which must be cash with order, are as follows: Exchanges of 20 words, including address, 10 cents; for each additional 10 words the charge will be 5 cents. No exchange will be inserted for less than 10 cents.

75 cents per annum for a monthly exchange of 20 words; $1.00 per annum for a monthly exchange of 30 words, with privilege of change each month.

EXCHANGES IN MOLLUSCA

OFFERED:—Goniobasis comalensis, pleurostriatus; Helix auriformis, texasiana, febigeri, mooreana, berlandieriana, espiloca; Helicina tropica, occulta: Bulimulus schiedianus, mooreanus; Gundlachia, Pyrgulopsis, Tryonia, etc., for fresh-water shells.
H. A. PILSBRY, Davenport, Iowa.

OFFERED:—Trivia Californica, Gray; Crepidula navacelloides, Nutt., adunca, Sby. Mopalia muscosa, Gld., Stenoradsia magdalensis, Rve., Tonicella lineata, Wood, Lepidopleurus Cooperi, Cpr. Trachydermon pseudodentiens, Cpr. Haliotis Cracherodi, Leach, rufescens, Swains; Mytilus Californianus, Con.; Pachydesma crassatelloides, Con.; Tapes staminea, Con.; Schizotherus Nuttallii, Con.; Saxodomus Nuttallii, Con; Zirphœa crispata, L. Helix Traskii, Nwc; Physa politissima, Tryon; for wants in Mollusca.
GEO. W. MICHAEL, Jr., Morro Bay, Cal.

NUMEROUS duplicates of European Land, Fresh-water and Marine shells to exchange for American Land and Fresh-water Shells. C. F. ANCEY,
Marseilles, France.

FOSSIL Land and Fresh-water Shells wanted; also, recent forms of Fossil genera, British and Foreign.
CHAS. MUSSON,
23 Napperly Hill, Nottingham, Eng.

OFFERED:—Ceylonese Shells, including rare species of Helix, Bulimus, Cyclophorus, Cataulus, etc.
WANTED:—Good Foreign or British Shells.
Miss LINTER, Twickenham, Eng.

OFFERED:—P. lineatus, A. fluviatilus, H. Cartusiana, H. caperata var major and ornata, P. secale, B. perversa, C. Rolphii, and A acicula. Wanted, British land and fresh water shells. C. H. MORRIS, School Hill, Lewes, Sussex, Eng.

WANTED:—British and Continental Unionidæ except "batavus." Offered:—British land and fresh water shells. G. S. TYE, 10 Richmond road, Birmingham, Eng.

MISCELLANEOUS EXCHANGES

OFFERED:—Florida Moss, Woods, Palmetto, Alligator Teeth, Wild Boar Tusks, etc., for foreign shells, curios, etc. C. F. SULZNER, Palatka, Fla. D. t. 2.

WANTED: Emu and Cassowary eggs in exchange for named shells. D. t. 2.

WANTED: Perfect Echinoderms, for named shells. D. W. FERGUSON, 138 Wilson st. Brooklyn, N. Y.

OFFERED:—100 British Wild plants, mounted on good paper, 16x10 in. for correctly named microscopic slides. J. J. PORTER, Perranarworthal, Cornwall, Eng.

TERTIARY and other fossils from Southern States and Europe; 50 species of Birds' Eggs, and 60 pounds of Minerals consisting of Amethyst on Agate; Agates rough and polished: Pyromorphite: Native Copper: Zinc blende: Galena: rare Iron Ores, &c., &c., for strictly fine and correctly named Mollusca from South and Central America, Asia, Africa, and Australia. Address, W. D. AVERELL, Chestnut Hill, Philada., Pa.

WANTED:—Histological and Pathological micro. slides. Dr. J. H. SMITH, 909 S. Charles st. Baltimore, Md.

WANTED:—A good work on Mollusca, for a beginner; not too expensive. Mollusca and curiosities to exchange. Send for list. EDWIN J. STEBBINS, Adrian, Mich.

KIRBY'S European Butterflies and Moths, new, cost 37 sh. 6 d. to exchange for telescope, album crustacea or other objects. JAMES ELLISON, Steelton, Leeds, Eng.

OFFERED:—Fossils, Minerals, Magazines, etc., for type, rule. F. E. WETHERELL, Oskaloosa, Iowa.

BOOK EXCHANGE

OPEN TO ALL SCIENTISTS AT THE SAME RATE AS "EXCHANGES IN MOLLUSCA"

OFFERED:—Woodward's Manual of the Mollusca 75 Edition: Leidy's Memoir of the Extinct Sloth Tribe, N. A.: Lea's Syn. of Family of Naiades, '52 edtn: Hays' Descrip. Inf. Maxys Bones of Mastodons, 10 plates: Agassiz & Gould's Comp. Physiology: Bohn's edt'n: Coultas, Prin. Botany, Cryptogamia: Lea's on a Fossil Saurian of the New ed Sandstone Formt'n: Lesquereux's Cretacceus Flora, 50 plates, Smith'n Mis. Col. Vol. 4, Neuroptera, Vol. 6 Diptera and Coleoptera, 3 pp out.

WANTED:—First 3 vol. Lea's Obs. Genus; Unio; Say's American Conchology: Gould's Invertebrata of Mass: Kiener's plates of Shells: Carpenter's works: Tryon's Monog. Terr, Moll. of U. S., Sowerby's Conch. Manual and Plates for offers in works on Conchology. W. D. AVERELL, Chestnut Hill, Phila.

OFFERED:—"A Manual of Zoology," by M. Milne Edwards; "A Manual of Blow pipe Analysis," by Wm. Elderhurst, M. D.: "Sulphurets," how concentrated, worked and assayed. Wanted—a good copy of "Woodward's Manual of Mollusca," and other works on Conchology. G. W. MICHAEL, Jr. Morro, Cal.

WANTED:—Tryon, American Marine Conchology, colored edition. Offered—Sowerby Veneridœ: Knorr, Hoorns en Schulzen. M. M. SCHEPMAN, Rhoon, near Rotterdam, Holland.

WANTED in exchange, any illustrated books on British Grasses and Mosses. T. J. PORTER, Perranarworthal, Cornwall.

OFFERED:—Cassell's Technical Educator, new, for good fossils or shells. R. CAIRNS, Ashton-under-Lyne, Eng.

WHAT offers for volumes II and IV, of Intellectual Observer, and volume I, and 22 parts of Popular Science Review. R. BROKENSHIRE, Oxford, Eng.

WANTED:—Scientific Books in exchange. G. W. HUMPHREY, Box 160 Dedham. Mass.

FINE BOOKS FOR SALE

It is said of Quaritch that should you entrust him with a cash order you will receive the book value of your money. Now, while we have all of Quaritch's honesty, coupled with a hearty desire to please you, we have not achieved his reputation. These books will establish a reputation for anybody. Sold only for Cash.

☞ The highest reference given if desired. ☜

Kirby and Spence. An introduction to Entomology or Elements of the Natural History of Insects with Plates, by Wm. Kirby and Wm. Spence, 4th edtn: 4 vols. ½-morocco; London, 1822. Price $18—Regular price $20.

D'Orbigny Charles M. Dictionaire universel D'Histoire Naturelle, Dirige Par M. Charles D'Orbigny. 15 vols.; 12 vols. of text and 3 vols. of plates, ½-morocco; Paris, 1849. Price $70. Regular price $75.

Westwood J. O. Arcana Entomologica or Illustrations of new, rare, and interesting Insects. 2 vols. ½-morocco. London 1845. Price $27.50. Regular price $30.

Sowerby, J. Genera of Recent and Fossil Shells for the use of Students in Conchology and Geology. Illustrated with 264 original Plates. 2 volumes, 8-vo. ½-morrocco. London, (N. D.). Price $15. Regular price $17.50.

Stephens, James and Francis. Illustrations of British Entomology, or a Synopsis of Indigenous Insects, containing their generic and specific Distinctions. Embellished with colored figures of the rarer and more intelligent species. 12 volumes; ½-roan London, 1828. Price $50. Regular price $55.

Lowe, E. T. Ferns, British and Exotic, 8 vols. New and Rare Ferns, 1 vol.; British Grasses, 1 vol.; Beautiful Leaved Plants, 1 vol.; Illustrated with beautiful Plates in colors. Together 11 vols., royal 8-vo. Half levant-morocco extra, gilt tops, London, 1872. Price $95. Regular price $100.

Woodward. Manual of the Mollusca, with Appendix by Ralph Tate. 642 pp: 23 plates, 441 figures, 270 illustrations, London 1880 edition. Price $2.50 post-paid. Formerly $2.60.

The same, 1875 edtn, price $2 post-paid.

Drury D. Exotic Entomology. Illustrations of, wherein are exhibited upwards of 600 Insects of the East and West Indies, China, New Holland, North and South America, Germany, etc.,, very few of which are figured in any other work. New edition with additions and Scientific Indexes by J. O. Westwood. 150 Plates beautifully colored. 3 vols.4 to. ½ morocco, uncut. London, 1837. Price $25.

"This exquisite work of Drury displays the complete insect in a degree of perfection that leaves nothing to be desired."—Sir James E. Smith.

Gould, John. A Century of Birds from the Himalaya Mountains. Folio: ½-morocco. (Scarce.) Price $70. Regular price $75.

Lowe, E. T. Beautiful Leaved Plants. Being a description of the most beautiful leaved Plants in Cultivation in this country. With 60 col'd illustrations. 8-vo. Half morocco extra, gilt tops. London 1861. Price $10. Regular price $12.

Tryon, Geo. W. Jr. Structural and Systematic Conchology, and, also, Manual of Conchology. The latest works for Conchologists. Subscriptions taken and filled. Circulars sent on application.

SPECIAL NOTICE:—A few second-hand copies of Tryon's Structural and Systematic Conchology for sale at $5.00—Cash.

Alphabetical Price-List of Shells

RECEIVED SINCE THE ISSUE OF CONCHOLOGISTS' EXCHANGE NO. 6

TERMS:—Cash with order. Express charges to be borne by purchasers in all cases.

NOTE:—A Discount of 10 per cent, payable in shells at list prices, will be allowed on all orders of $5 and upwards accompanied with the "cash." This discount applies to "Price List of Mollusca, No 2," and all subsequent Lists until further notice. *Names by Prof. Tryon, localities exact.*

BIVALVES

ASAPHIS

deflorata, L. (Bahamas) 15 to 25
" " (Society Is.) 25
arenosa, Rumph . . . 35

ANODONTA

implicata, Say 20

CIRCE

pectinata, L. . . . . 15 to 30

CYTHEREA

trimaculata, Lam . . 20, 25

DOSINA

discus, Rve. 15, 25

DONAX

fabus, Chem 5,

LINGULA

anatina, L . . . . . 35, . .

MACHÆRA

gibba, Spg. 20, 25

MESODESMA

Novæ-zelandiæ, Chem. 25,

MYTILICARDIA

variegata, Brug. . . . 15, 20

TRIGONIA

Lamarckii, Gray . . . 25,

UNIVALVES

ACHATINELLA

lorata, Fer. 5,
mustelina, Migh. . . . 5,
Swiftii, Nwc. 5, 10
apicata, Nwc. 5, 10
curta. Nwc. 10, 15
diversa, Gulick 10,
Dunkeri, Cumg. . . . 20,
olivacea, Rve. . . . 5,
producta, Rve 5, 10
varia Gulick. 5,
virens, " 5, 10
Byronii, Gray 5, 10
rosea, Swn 10, 15
Mahogani, Gulick . . . 15, 20
Dwightii, Nwc 15,
perdix, Rve 10,
proximus, Pse 10, 20
Redfieldii, Nwc. . . . 20,
tessellata, Nwc. . . . 10, 15
virgulata, Mgh. 5,
" " var. . . 5,
" " " . . 5,
Helena, Nwc. 10, 15
physa, Nwc. 10,
bella, Rve, ... 5,
Mighelsiana, Pfr. . . . 10,
polita, Nwc. 5,
staminea, Rve. 5, 10
sanguinea, Nwc. . . . 10, 5
venusta, Mgh. 3,
plicata, Mgh. 10, 15
brunnea, Smith 3, 5
affinis, Nwc. 5, 10
nigrolabris, Gulick . . 15,
nubilosa, Mgh 15,
obesa, Nwc. 15,
rubens, Gould 10,
soror, Nwc. 5, 10
spirizona, Fer. 5, 10
ventulus, Fer 5, 10
violacea, Nwc. 20,
Hutchinsonii, Pse. . . . 10,
chrystallina, Gulick . . 5, 10
labiata, Nwc. 5, 10
nitida, Nwc 3, 5
gracilis, Pfr. 10,
crassuls, Smith. 5,
auricula, Fer. 3,
cinnamomea, Pfr. . . . 15,
Alexandri, Nwc. . . . 10,

CYPRÆA

ventriculus, L. . . . 50,
mauritiana, L . . . . 20 to 50

CONUS

imperialis, L 75
striatus, L 60

FASCIOLARIA

trapezium, L 60, 80

FISSURELLA

picta, Gmel. (Patagonia) 40

HALIOTIS

pulcherrima, Mtn. . . 25,

HELIX

tephrodes, Pfr. . . . 50, 60
ovum, Val. 50, 1.00

MITRA

cucumerina, Lam . . 20,

MUREX

triquetra, Born. . . . 20,

NASSA

vibex, Say. 3, 5,

PATELLA

deaurata, Gmel. (Patagonia) 35
cochlear, Born.
(Cape of G Hope) 25, 30

PTEROCERA

scorpio, L 35,
millipedes, L 60,
lambis, L. 30,
chiragra, L. 40,

PYTHIA

leopardus, Rve. 20,
chalcostoma, A. Ads . 25,

RIMELLA

cancellata, Lam. . . . 40,

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Editor and Publisher,
Chestnut Hill.

Philadelphia, Pa., U. S. A.

SINCE the first of August, 1886, we have distributed freely among the scientists of this and foreign countries upwards of 15,000 copies of THE CONCHOLOGISTS' EXCHANGE and we have the great satisfaction of hearing from many sources that our liberality is appreciated. A glance at our columns in this number will convince you that we justly think our publication of more value to science than ever, while a kindly comparison with the early numbers will clinch the argument. As promised, Mr. William A. Marsh begins in this number a highly interesting series of original articles on the land and fresh-water shells of Mercer County, Illinois. Mr. Charles T. Simpson of Ogallala, Nebraska, contributes a valuable paper which will throw much light upon the molluscan fauna of Tampa Bay, Florida. Our Young Collectors' Corner makes its first appearance this month and is designed, as its title indicates, for beginners in Conchology. Dr. V. Sterki, late of Switzerland, has written for this column an article which will be of especial value to our young friends in collecting shells. We agree with Dr. Sterki in urging the young to collect and study the smaller shells as well as the larger specimens, for in no other way can the youthful scholar hope to excel.

A NOTABLE instance of unchanged habitat is furnished in the case of *Cyclostoma elegans*. This pretty shell is found to-day in Burwell Wood, Lincolnshire, England, in the same locality in which it was found in 1678 by Dr. Martin Lister an enthusiastic conchologist who records the fact in his quaint work entitled "Historæ Animalium Angliæ." Dr. Lister also found *Zonites fulvus* in moss at the roots of trees in the same noted forest, but later writers have pronounced it extinct in that locality. Apropos of this circumstance, and in view of the painstaking and loving care with which successful collectors pursue their studies in Conchology, we wish to impress upon young collectors the importance of exactness in recording the details of their rural excursions and evening experiments.

THE next number will contain an article upon the Helicidæ, by Mr. C. F. Ancey, continued from No. 5; one from Rev. W. M. Beauchamp upon "The Erosion of Fresh-Water Shells," together with a continuation of the two leading contributions begun in this issue. The admission to this feast will be a fully paid subscription presented at the door.

BRIEF NOTES ON THE LAND AND FRESH-WATER SHELLS OF MERCER CO., ILL.

BY WILLIAM A. MARSH.

THERE is, perhaps, no locality in the Northern States that can furnish to the ardent collector more species of fluviatile mollusks than Mercer County, Illinois. The Mississippi River, which washes its whole Western boundary, with its numerous sloughs, the great number of small lakes and ponds in the Northwestern part of the County, known as the Bog Island, make it a grand repository for molluscan life. We have, also, Edwards and Pope Creeks running the entire length of the County from East to West, and emptying their waters into the Mississippi River, besides some four or five smaller streams—all of which furnish a few species not found in the river proper. An experience of nearly fifteen years careful collecting in the waters of this County has very likely brought to light about all the species that will be found in the County. The family *Unionidæ* is represented by fifty-seven described species, forty-five of which belong to the sub-genus *Unio*, five to *Margaritana*, and seven to the sub-genus *Anodonta*.

NOTES ON FLUVIATILE SPECIES, FAMILY *Unionidæ*, SUB-GENUS *Unio*.

1.—Unio anodontoides, Lea.

This fine and very distinct species (which has a geographical distribution from Western New York to the Colorado River of Texas), is found rather commonly in the Mississippi River, and very abundantly in the adjoining sloughs. The forms found in the river are either of a milky white or light straw-colored epidermis; while the forms found in the sloughs are beautifully rayed. It is a smooth, wide species with a rather thick shell. It seems to be quite an active species, for I have often found it in considerable numbers very near the margin of the river, or slough, in times of high water.

2.—Unio Æsopus, Green.

This is a sparsely nodulous *Unio*, oblique in outline. It is found rather commonly in the river and usually keeps in deep water. This species attains a large size and when adult has a dark brown epidermis. It is very distinct from any other species found in our locality, and when once known may be easily identified. The animal of Æsopus is always of a reddish or salmon color.

3.—Unio alatus, Say.

This beautiful species occurs rather rarely in the Mississippi, but is more common in the sloughs along the river. It is a winged or symphynote shell and is usually covered with dark green rays. The nacre is always of a pink or chocolate color. Alatus often attains a large size, the finest specimens being obtained from the sloughs.

4.—Unio arctior, Lea.

This shell is probably only a variety of *Unio gibbosus*, Barnes. It however differs from *gibbosus* in having a white nacre and it seems to attain a larger size. I have found it in but one stream (Edwards Creek) and regard it as a very rare species in this locality. I have received this shell from Ohio, Indiana, Tennessee, Alabama and Arkansas.

5.—Unio asperrimus, Lea.

This very fine nodulous shell is very close to our Unio lacrymosus, Lea, differing in its larger size and very much longer and sharper tubercles and it is also more inflated. *Unio asperrimus* occurs only in the Mississippi and is very rare. I have not found over a dozen of this species.

6.—Unio capax, Green.

Capax is one of our finest and most interesting species. It is found only in the Mississippi and I regard it as a rather rare shell. It is a very active species and when the river is low it may be found busily plowing its way through the sand. The epidermis is smooth and of a yellowish horn color, although occasionally a specimen may be found having a beautiful pink nacre and covered with dull

green rays. In some respects *Unio capax* favors *Unio ventrisosus* but it is very distinct, however, from that shell.

7.—Unio coccineus, Hildreth.

This extremely variable species is found only in Edwards Creek, where it is associated with *Unio rubiginosus*, Lea, which it much resembles, but as found has a much smoother epidermis, is more beautifully rayed, and has a beautiful pink nacre. It is a very rare species here and will probably soon be extinct.

8.—Unio cornutus, Barnes.

This species is found rather sparingly in the Mississippi. I regard it as very constant in its characteristics, although I often find individuals entirely devoid of rays. It is a tuberculate shell, and is usually very finely colored with greenish dots and rays.

9.—Unio crassidens, Lam.

This is a very thick and heavy species, with dark pink nacre. When young, *crassidens* is beautifully rayed, but the rays usually become obsolete as the shell grows older. It is found only in the river and is very rare, as in fifteen years' collecting I have secured but three specimens.

10.—Unio donaciformis, Lea.

This small and very handsome species is found rather commonly in the river and adjoining sloughs. It is the *male* of *Unio zig-zag*, Lea, and as Mr. Lea named it first, it takes precedence. Mr. Lea's types were from Tennessee but there is little difference between our shells and those in my cabinet from the Cumberland River, Tennessee.

11.—Unio Dorfeuillianus, Lea.

I have very rarely found this species in the river. It is a fine shell and apparently very closely allied to *Unio pustulosus*, Lea, although it seems to differ from *pustulosus* in having a darker epidermis and fewer nodules. It also differs in *outline*, which is triangular, while *pustulosus* is subrotund. For some reason I have not been able to secure a single specimen of it for some three or four years.

12.—Unio ebenus, Lea.

This common species has a dark brown epidermis and is thick and solid in structure. The male is quite different in outline from the female. This is the most abundant species in the river, equalling in numbers all other species of Uniones combined. When collecting in deep water it proves very troublesome as it is often necessary to handle a vast number of this shell in order to obtain other more desirable kinds. It is a deep water shell and very sluggish in its movements, preferring soft, gravelly bottoms, and seems to discard muddy locations Ebenus has a white, pearly and very iridescent nacre, but occasionally I have found it having the nacre tinged with pink.

13.—Unio elliptsis, Lea.

This is a very abundant species and takes rank next to *Unio ebenus* for numbers. It is of a smooth, elliptical form, with a dark brown or dark green epidermis. Some specimens have finely marked rays, while many are (especially when adult) entirely devoid of them. This species is at times very active and may be found near the margin of the Mississippi in great numbers, expecially the very young and half-grown individuals.

14.—Unio elegans, Lea.

As its name implies, this is one of our most beautiful species. It is only found in the river and is rather a rare shell. In its surface marking and nacre, it is extremely variable, hardly any two shells being found alike. Some specimens have a salmon colored nacre, some are pink, others are white, shining and very iridescent; others, still, are beautifully rayed, while some are found entirely devoid of rays. The color of the epidermis is also variable, ranging from a light straw, through the various shades of green to those of dark and light olive in in different specimens. The epidermal markings of some are very remarkable, being covered with greenish spots, some cuneiform and others zig-zag, interrupted by lines of growth.

To be continued.

RECORD OF A TWO DAYS' DREDGING CRUISE IN TAMPA BAY, FLORIDA.

BY CHAS. T. SIMPSON.

THE following record of a two days' dredging cruise in Tampa Bay, Florida, will serve to show the wonderful richness of marine molluscan life upon the West coast of Florida, both as to numbers and species. I found this locality to be one of the richest for small species of any visited in my sojourn of four years in the state. The record was made out immediately after the work was done. Some names have been added and corrections made since.

Locality: Tampa Bay, Florida, from mouth of Manatee River to Point Pinellas, Mullet Key and return. Depth, one to six fathoms. Date, August 3d and 4th, 1885.

SPECIES	LIVING	DEAD
Strombus pugilis, L.	Many	. .
Strombus pugilis, var alatus, Gmel. (Young.)	3	1
Murex pomum, Gmel, (Dead and Worn.)	. .	1
Murex nuceus, Morch	Many	. .
Muricidea Hemphilli, Dall	Many	A few
Murex cellulosa, Con. ? This shell agrees better with Conrad's description of this than anything else. The species is unfigured.	Many	. .
Urosalpinx cinerea, Say	Many	. .
Eupleura caudata, Say	5	. .
Fasciolaria distans, Lam. Young.	1	. .
Fulgur pyrum, Dill (Very young.)	1	. .
Nassa vibex, Say	Many	. .
" ambigua, Mont. (Very fine: the form consensa, Rav.)	1	. .
Marginella apicina, Mke.	4	. .
" nitida, Hds. (Small, but full grown.)	1	. .
Olivella mutica, Say (Mostly quite small.)	Many	Many
Olivella mutica, var. (Young; a delicate form, zig-zagged with yellow lines.)	Many	. .
Oliva literata, Lam. (In six fathoms.)	5	. .
Columbella mercatoria, L. (Young, but fine.)	1	. .
Columbella lunata, Say	6	. .
" semiplicata, Stns (All incrusted; many dead with hermit crabs.)	A Few	Many
Columbella acuta, Stearns	3	.
" Stearnsii, Tryon	. .	1
" Hotessiuri, Orb.	. .	2
Conus pygmæus, Rve. (Very dark; fresh.)	. .	2
Conus Pealii, Green (Covered with barnacles and shells.)	2	. .
Terebra protexta, Con. (Some quite fresh.)	. .	Many
Terebra dislocatus, Say	Many	. .
" concava, Say (Not hitherto reported on the West coast that I know of.)	1	1
Pyramidella tessellata, Ad.	4	. .
Eulima conoidea, Ktz. & Stm (Live specimens, very fine, covered with young oysters.)	3	2
Scalaria angulata, Say.	1	. .
Turbonilla viridaria, Dall.	. .	Many
Natica pussilla, Say (Young; very richly marked, carried by hermit crabs.)	Several	. .
Natica duplicata, Say	. .	1
Sigaretus perspectivus, Say	. .	1
Rissoina pulchra, C. B. Ad (?).	6	. .
Bittium nigrum, Tatt (Both the dark and pale varieties.)	Many	Many
Galerus caudeanus, Orb. (The only living specimen I ever obtained.)	1	Several
Odostoma granatina, Dall	3	. .
Niso anglees, Bush (Two young.)	4	. .
Crepidula fornicata, Say	Many	. .
" plana, Say (On interior of dead shells.)	Many	. .
Phasianella umbilicata, Orb.	. .	. .
Bulla occidentalis, Ad.	. .	1
Actæon punctatus, Orb	. .	5
" floridanus, Con.	1	3

To be continued.

Young Collectors' Corner.

COLLECTING SHELLS IN DRIFT.

BY V. STERKI, M. D. NEW PHILADELPHIA, O.

AT this time of the year freshets are very prevalent throughout the country, and this very fact furnishes you with an excellent opportunity to collect the smaller species of land and fresh-water shells. Gather carefully the fine drift deposited in smaller or larger quantities—sometimes very little and yet valuable—at the edge of high water, by basketfuls or even bushels, carry it home and let it dry upon a suitable piece of cloth, such an an old bed sheet. When the drift is dry, shake and rub it gently, pass it through a sieve or handle it otherwise so that the smaller particles may be separated. Place these by handfuls upon the table and pick out the small shells with the aid of a fine pair of pincers. You will, in most instances, find many valuable specimens. Look especially for Pupas and Vertigos.

Many of these shells will be more or less weathered, while a part of them will be found in good condition. You may find species in this way which you have looked for in vain elsewhere, while your attention may be directed to certain new forms not thought of before.

VALVES.

Shells have valves just as books have leaves, and upon these valves you may read their life-histories.

President Dwight, of Yale College, has a scholarly stoop in his shoulders, and seeing this and not meaning any disrespect, a little New Haven girl said to her mother: "Mamma, I think he is the *stoopedest* man I ever did see."

A funny little mollusk dwells in the harbor of Sydney, Australia, known by the name of *Trigonia*.(three-cornered). A specimen of the comb-like *Trigonia* or *T. pectinata*, Lam. when placed on the gunwale of his boat by Mr. Stutchbury, leapt overboard, clearing a ledge of four inches.

The boys and girls interested in shells and living near San Joaquin River, Cala., will have no trouble in collecting fresh-water mussels (Unionidæ) now, as the water is low and the river bed and the bottom of the large sloughs are fairly covered with them. Pearls of fair color are found in these bivalves.

Did you ever collect shells at Cape Henlopen, Delaware? We have, and at low tide have secured fine specimens of *Busycon. Pyrula, Natica, Crepidula, Sigaretus, Petricola, Littorina, Solen*, and many others too numerous to mention here, certainly enough specimens to keep your hands and heads busy for many evenings and leisure days.

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HERBARIUM—British and foreign. What offers? J. H. LEWIS, F L. S., 145 Windsor street, Liverpool.

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Continued on page 48

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AMPULLARIA
Layardi, Rve 25, 30

CYCLOSTOMA
Kraussianum, Pfr. (Natal) 20

HELICINA
tectiformis, Mouss . . 10
miniata, Less 5

LITTORINA
obesa, Sby 5

MELANIA
Mauiensis, Lea . . . 15, 20
Newcombi, Lea . . . 10, 15
Graffiii, Mohss 15
Scipio, Gld 20
scitula, Gld 10, 15
Assaviensis, Mouss . . 5, 10
picta, Hds 10
Montrouzieri, Garr . . 5, 10
tetrica, Gld 15, 10
villosa, Phil 25
Samoensis, Rve . . . 15
corporosa, Gould . . . 10, 15

PYRAMIDELLA
maculata, Lam . . 25

OLIVA
guttata, Lam . . . 30

TURRICULA
exasperata, Chem . . . 10, 15

TEREBRA
affinis, Quoy 10

PARTULA
decussatula, Ptr . . . 10
dentifera, Pfr 10
faba Mtn (Type) . . . 20
faba Mtn. var. amanda 15
faba Mtn. var. subangulata 15
formosa, Pse 20
Ganymedes, Pfr . . . 10
Garrettii, Pse 10
imperforata, Pse . . . 10
inflata, Rve 10, 15
lirata, Mouss 5, 10
lugubris, Pse (Type) . 15
lutea, Less 10, 15
Navigatoria, Pfr . . . 20
Otaheitana, Brg . . . 10, 15
Otaheitana, Brg. var, Reeveana 10, 15
Raiatensis, Garr . . . 10, 15
rosea, Brod. (Type) . . 15
rosea, Brod. var. bicolor 15
rosea, Brod, var. purpurascens 15
rosea, Brod. var, straminea 10, 15
taeniata, Meh. (Type) 15
taeniata, v. simulans, Pse. 5, 10
taeniata, v. strolata, Pse. 10
taeniata, v. unicolor, Pse. 5, 10
Thalia, Garr 10
umbilicata, Pse. . . . 5, 10
varia, Brod. 5
varia, Brod. v. glutinosa 10
vexillum, Pse 10

The Conchologists' Exchange.

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A Publication Designed for Conchologists and Scientists generally.

ISSUED MONTHLY

BY

WM. D. AVERELL,

EDITOR AND PUBLISHER.

☞ Correspondence upon Conchology, as well as reliable items of interest concerning the Mollusca, their habits, localities, etc., kindly solicited from all.

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Philadelphia, Pa., U. S. A.

WE present our readers with a double number this time; those for March and April being combined in order to more comfortably provide for future issues. It is proposed to make the number for May twelve pages in size, instead of eight as heretofore, and to have it well on its way to our readers by the 15th of the month.

EROSION OF FRESH-WATER SHELLS.

BY REV. WM. M. BEAUCHAMP.

(No. II.)

IT may prove a mistake to suppose that the erosion of shells is caused by the presence of lime in the water, and I judge it is oftener due to the emission of carbonic acid gas from plants acting upon the lime of the shell. Seneca River in New York, flows for a long distance through gypseous shales (sulphate of lime), and its shells are but moderately eroded, though affected by vegetable coating. In Onondaga and Cross Lakes, in the same formation, living shells are rarely eroded, while dead shells soon become rotten in the abundant marl. On the other hand Beaver Lake, a shallow pond a mile from and above the level of Seneca River, produces *Unio complanatus*, small and much eroded, and the large *Anodonta fragilis* is often worn entirely through the beaks. The pond has mucky shores and is filled with water weeds. Oneida Lake, 22 miles long, shallow, and in a level country, is another case in point. It is difficult to find a fair specimen of Unionidæ there, and at its outlet the little *Unio Novi-Eboraci* is very badly eroded. Still further north and in a sandy region, Salmon Creek furnishes *Melantho decisus* with the apex squarely cut off, a rare thing in this part of the country.

BRIEF NOTES ON THE LAND AND FRESH-WATER SHELLS OF MERCER CO., ILL.

BY WILLIAM A. MARSH.

(Continued.)

15.—Unio graniferus, Lea.

This is a deep-water shell and is rather rare. It has been thought by some conchologists to be identical with *U. verrucosus*, Barnes, but such is not the case. It is a thick, heavy species and usually thickly covered with tubercles. The nacre is either of a chocolate or copper color and very shining. I have never found it near the margin, but always near the channel of the river; being one of those species that remains very inactive and is found buried deeply in the sand and gravel beds.

16.—Unio gibbosus, Barnes.

This is a fine species and is nowhere abundant in this locality. I have never found more than a dozen specimens in the river, but it is more common in Pope and Edwards creeks. It is somewhat variable; the river forms being solid and very gibbous in outline, while the creek forms are nearly as straight as the *U. rectus*, Lamarck, with very much thinner shells and narrower teeth. The epidermis is dark brown, usually rayed, but very obscurely. Nacre either copper or chocolate colored. The beaks when perfect are coarsely granulated.

17.—Unio gracilis, Barnes.

This is a winged or bialate shell, very thin and fragile, but owing to the peculiar texture of the epidermis it does not crack badly. It is found in the river abundantly and inhabits both shallow and deep water, and also occurs, although very sparingly, in Pope and Edwards creeks. *Gracilis* is usually finely rayed, but it is often found devoid of rays. It is very active in its movements and I have often found this species with *U. lævissimus* in great numbers in the river very remote from the channel, crawling around in the sand in water but a few inches in depth. As far as my observations go it is our most active species.

18.—Unio Higginsii, Lea.

A thick and heavy shell with a dark brown epidermis; teeth very large; shell oblique in outline; nacre white or salmon color. It is found only in the river and is very rare, as I never found more than a dozen specimens. Habitat, deep water, near the channel. The young are beautifully rayed but the rays become obsolete with age. It resembles *ellipsis* somewhat but differs in outline. In its teeth and in its high, massive incurved beaks it also resembles *orbiculatus* Hild., somewhat, but differs very materially from that species in its outline, teeth and beaks, while it is very much more inflated. There is a wide difference between the sexes of this species

19.—Unio lævissimus, Lea.

This remarkably fine species is found here rather sparingly in the Mississippi River and its sloughs and lakes. Like *gracilis* it is an alated or winged shell and although it closely resembles *gracilis* in some respects, it is a very distinct species. At certain seasons of the year it seems to be very active and may then be found out on the sandbars where the water is very swift and but a few inches in depth. The handsomest specimens of this shell are found in the river sloughs having a muddy bottom, where it seems to be more abundant than in the river.

20.—Unio ligamentinus, Lam.

This species attains a very great size and is found here only in the river, in deep water and is quite common. There are two quite distinct varieties, one having a white pearly nacre and beautiful green rays when young; while the other has a pink nacre with very dark green rays and, when young, strongly resembles the young of *crassidens*. Professor R. E. Call in the Bulletin of the Des Moines Academy of

Science, page 54, says that the types of my *Unio Upsonii* came from the Mississippi River in the western border of Mercer County. This is a mistake as my types of *Unio Upsonii* came from Kishawaukee River, Winnebago County, Illinois, and I have never laid any claims to having found this shell in Mercer County. There are a number of Southern species closely resembling *Unio ligamentinus*. The light-colored variety is often received from collectors as *Unio crassus*, Say, but Mr. Lea said that the true *crassus* of Say was an European species.

21.—Unio luteolus, Lam.

This is a handsome and extremely variable species and is probably the most widely distributed *Unio* in North America, having been found as far north as the Red River of the North, and is also reported from Texas. There are many Southern species very closely resembling *luteolus*. It is found here in Pope and Edwards Creeks and abundantly in the sloughs of the Mississippi River. There seems to be four varieties of this shell here; one variety, found in Pope Creek, is entirely devoid of rays, in this respect closely resembling the Southern form, *Unio stamineus*, Con.; the second variety, found in Edwards Creek, is quite flat and beautifully rayed; the third variety, found in the river sloughs, is very much inflated and the male differs greatly from the female in outline, while the fourth variety is found in the river proper, and is very difficult to separate from the green variety of *Unio ligamentinus*, Lamark, as it is a thick, solid variety and very straight on the dorsal and ventral margins.

22.—Unio lacrymosus, Lea.

A fine pustulose species found sparingly in the river sloughs and in the small lakes on the Bog Island, and seems to delight in the muddy bottoms of the sloughs and lakes. Lacrymosus is certainly closely allied with *asperrimus*, Lea, if not identical with it. In most cases I have found it associated with three of our rarest species, viz: *multiplicatus*, *Mississippiensis*, and *Margaritana confragosa*.

23.—Unio monodontus, Say.

This very rare species in any locality is really a *Margaritana*, but was described as a *Unio*, and is generally classed as such. It occurs here only in the river and it certainly is a rare occurrence to find it here at all. I have never found one alive, but frequently find dead shells, which is probably owing to its very peculiar habits. I am informed that this species is usually found in or near the channel of the river, deeply imbedded in loose gravel and usually sheltered by some large rock, and seldom if ever moves unless disturbed by some agency no. its own.

24.—Unio metanever, Raf.

A beautiful pustulose species found very abundantly in the Mississippi river in deep water. It is a thick, heavy shell, usually covered with very beautiful arrow-head markings, although a variety, which we also have here, is provided with a very dark green epidermis and is entirely destitute of rays. It is a sluggish species and is found near the channel of the river, usually embedded in the banks of coarse gravel and sand. Years ago it occured rarely in Edwards Creek, but is now extinct in that stream.

To be continued.

NEW LOCALITIES.

Ed. Conchologists' Exchange,

Sir:—A new locality, and the only one I have found, for *Unio amygdalum*, Lea, is Lake Dias, Volusia Co., Florida. *Unio occultus*, Lea, I have found in Lake Monroe, also, at the inlet of Lake Woodruff, but it is rare. S. Hart Wright, M. D.,

March 15, 1887. Lake Helen, Fla.

PUBLICATIONS RECEIVED.

List of Unionidæ received during 1885 and 1886, from Wm. A. Marsh, Aledo, Ill.—Canadian Etomologist.—Science Observer (The Proceedings of the Boston Scientific Society).

Bulletin of the Brookville (Ind.) Society of Natural History.

Land Shells of the Hawaiian Islands, by Mr. D. D. Baldwin, from the author.

RECORD OF A TWO DAYS' DREDGING CRUISE IN TAMPA BAY, FLORIDA.

BY CHARLES T. SIMPSON.

(Concluded.)

Locality; Tampa Bay, Florida, from mouth of Manatee River to Point Pinellas, Mullet Key and return. Depth, one to six fathoms. Date, August 3d and 4th, 1885.

SPECIES	LIVING	DEAD
Melampus, coffeus. L. (Small.)	. .	1
Ostrea virginica, Gmel. (Living ones small and attached to other shells.)	Many	Many
Anomia glabra, Verrill	Many	. .
Pecten dislocatus, Say (Distorted.)	1	Many valves
Plicatula ramosa, Lam	Many	Many
Mytilus exustus, Orb (Very dark colored.)	6	. .
Mytilus cubitus, Say (All attached to shells.)	Many	. .
Arca floridana, Con. (Young. Covered with small oysters.)		Many valves
Pectunculus pectinatus, Lam.	Many	. .
Nucula eborea, Con. ?	Several	Odd valves
Cardium muricatum, L. (All young.)	Many	. .
Cardium magnum, Born (Very young.)	2	. .
Lævicardium Mortoni, Con. (Mostly dark colored.)	Very many	. .
Lucina lintea, Con.	Many	Many
" squamosus, Lam.	Several	. .
" floridana, Con (Fresh.)	. .	1
Lucina trisulcata, Con	2	Many
" pecten, Lam	3	Valves
" costata, Con	. .	Many
" crenulata, Con.	3	5
Cardita floridana, Con. (Very young.)	1	. .
Crassatella lunulata, Con (Some of these finely marked.)	Many	. .
Venericardia perplana, Con (Not found living elsewhere.)	Many	. .
Parastarte triquetra, Con.	3	. .
Pleuromeris tridentata, Say	Very many	Odd valves
Venus ? ortoni, Con (The young *fulgurians* form.)	. .	1
Venus cancellatus, Gmel. (Small.)	1	. .
Venus interpurpureus, Con. (Rare.)	1	. .
Venus inæquivalvis, Orb. (Not found living elsewhere.)	5	. .
Cytherea Conradina, Dall (Many finely marked with chevron lines. Several brown specimens.)	Many	Many
Cytherea maculata, L.	. .	1
" gigantea, Chem (In shallow water.)	. .	Many
Dosinia discus, Rve	. .	2
" tenuis, Dkr	. .	½
Kæta canaliculata, Say	. .	½
Tellina brevifrons, Say	1	. .
" Souleyetiana, Recl.	Many	Many
" mera, Hanley	. .	Many
Semele cancellata, Orb (Very many valves.)	. .	Many
Cummingia tellinoides, Con	. .	½
Solecurtus divisius, Speng	. .	6
Corbula nasuta, Say.	Many	Many
" Swiftiana, Ad.	Many	Many
Rocellaria ovata, Sby	1	. .
Pandora Bushiana, Dall	6	Valves
" trilineata, Say. (The true *Pandora trilineata* of Say. Mr. Dall has shown (Bulletin Mus. Comp. Zoology P. 312), that the New England shell usually bearing this name is another species.)	175	Several

SPECIES.	LIVING.	DEAD.
Dentalium diparile, Orb . . .	Many	Many
Cerithium muscarum, Say . . .	. .	16
Trochus tampaensis, Con . . .	2	. .
Pleurotoma Simpsoni, Dall. N.S.	2	. .
" limonitella, Dall .	7	. .
Cautharus coromandelinus, Lam (Old and broken but very large.)	. .	1

General Results.—A very large number of bivalves both as to species and individuals, and a great many young and small adult shells. *Columbella mercatoria* was not obtained at any other time North of the Lower Keys.

DESCRIPTION OF NEW GENERA OR SUBGENERA OF HELICIDÆ.

BY C. F. ANCEY.

(Continued from No. 5, page 20.)

V. Bertia, Ancey. "Testa maxima, sinis-"trorsa, solida, sat minute umbilicata, nitidula, "subtus nitida flavaque, nigro late fasciata, "superne brunnea. Spiro elevato fornicata, "globosa obtusissima. Anfractus sat numerosi, "regulariter crescentes, ultimus tumidus, rotun-"datus. Apertura obliqua, peristoma simplex, "acutum, ad umbilicum eversum."

Type. Nanina Cambodgiensis, Reeve.

Geog. distribution. Indo-China.

This very fine shell has been referred by some authors to Rhysota and by others to Ariophanta, probably on account of its large size and sinistrorse shell. It widely differs from both. The Rhysota have a large, heavy shell, but the characters of the aperature and umbilicus are quite distinct; while Ariophanta, Desm, are furnished with a thickened peristome.

VI. Rhysotina, Ancey, "Testa solida, "imperforata, semi-globosa vel subdepressa, "fulva absque nitore, spiraliter impressa. Spira "convexo-elevata vel convexo-conoidea, apice "lævigata. Anfractus modice numerosi, regu-"lariter crescentes, sutura parum profunda "separati, ultimus rotundatus, major, subtus "convexus et in umbilici loco depressus. Aper-"tura substricta, peristomate obtusato, prope "columellam obtuse lateque plus minusve "dentato."

Types. Helix Welwitschi, Mor. and H. hepatizon, Gould.

Geog. distribution. Island of Sao-Tome.

The present series is certainly more closely allied to Cælatura than to any other group of Helices. It bears no relation to the Canarian group of Helix malleata, as suggested by several conchologists.

VII. Sheldonia, Ancey. "Testa fragilis, "imperforata, gobosa, quasi sericatula, glabra. "Spira convexo-elevata, obtusa; anfractus "minus numerosi, rapide accrescentes, ultimus "globosus, antice non deflexus, maximus, margo "columellaris tenuissimus. Peristoma simplex "acutem."

Types. Helix Trotteriana, Bens., H. phytostylos Bens., H. Natalensis, Pfeiffer and perhaps Cotyledonis, Bens.

Geog. distribution. South Africa.

Sheldonia resemble Cysticopis, but are ap. parently related to Ærope.

VIII. Bermudia, Ancey. "Testa lenticu-"laris, solida, oblique striata, epidermide och-"racea induta, umbilico cylindrico prædita, "acute carinata, circa umbilicum angulosa. "Anfractus 5 regulariter crescentes, applanati, "ultimus non antice deflexus. Apertura "obliqua, peristoma simplex, acutum basi intus "albo incrassatum, margo columellaris crassus, "cum basali angulum efficiens. Animal Zoni-"tidarum instar."

Type. Helix Bermudensis, Pfeiffer.

Geog. distribution. Bermuda.

IX. Atlantica, Ancey. "Testa externe "characteribus Heiicis rotundatœ gaudens, "supra grosse plicatula, infra lævior, ad per- "iphireamsubangulata,seriebus remotis dentium "ut in Polygyrella, polygyrella, Bland et "Cooper exornata "in interiore palato ultimi "anfractus."

Type. Helix semiplicata, Pfeiffer.

Geog. distribution. Madeira.

X. Chrysodon, Ancey. "Testa tenuiuscu- "la, umbilicata, nigrescens, hirsuta. Spira vix "elevata, fere plana. Anfractus modice accres- "centes, ultimus convexus, magnus, lateribus "rotundatus. Apertura parum obliqua. Peri- "stoma tenuiter incrassatum et reflexum, color- "atum, bidentatum, scilicet; dente uno in mar- "gine dextro extus cicatricem impressam effor- "mante, altersque basali."

Type. Helix auridens, Rang.

Geog. distribution. Mountains of Martinique, W. I.

This shell is certainly more closely allied to Dentelaria (which it resembles in color and texture) than to Cepolis, Monfort, as stated by Pfeiffer.

XI. Traumatophora, Ancey. "Testa sat "magna, modice solidula, depressa, umbilicata "rubro-fulva, sub lente exiliter granulosa. Spi- "ra subelevata; aufractus 5-6, ultimus antice "distincte strictus et ad aperturam obliquam "deflexus. Apertura intus in palato dentibus "3 parallelis et oblique sitis elongatisque extus "profunde scrobiculatis armata et constricta. "Peristoma labiatum et reflexum."

Type. Helix triscalpta, von Martens.

Geog. distribution. Central China (Kiaing- se).

This very remarkable species, I think, is very near H. augusticollis, Martens, another Chinese form, and the type of Stegodera, Martens. The texture and color are precisely the same.

To be continued.

CORRESPONDENCE.

Editor Conchologists' Exchange:

Sir: * * * The eleven species of Pupa collected in this vicinity are as follows: *Pupa armifera*, Say; *contracta*, Say; *pentodon*, Say; *curvidens*, Gould (probably *pellucida*, Pfr.); *fallax*, Say; *corticaria*, Say (Vert.) *Gouldi*, Binn., very rare; *ovata*, Say, *milium*, Gould; *P. edentula*, Drap. (same as *Vertigo simplex*, Gould), and a Vertigo unknown to me, with from three to four small, fine teeth, and no impression or crest outside near the aperature. In the Fall of 1885, I found two weathered specimens at Columbus, O., and two good ones yesterday in drift on Tuscarawas River.

V. STERKI, M. D.,
Feb. 12, 1887. New Philadelphia, Ohio.

Editor Conchologists' Exchange:

Sir: In the sixth number of The Conchologists' Exchange, 1886, p. 26, Mr. Harry A. Pilsbry, has remarked that several of the names I proposed for some groups of Helices were preoccupied in other departments of Natural History. The same conchologist suggested in the article named that *Pristina*, (used by myself) should be replaced by *Anceya*.

I am very thankful to Mr. Pilsbry for naming the group of *Zonitidæ* I allude to, after me, but a remarkable clausilioid genus, found by the celebrated French traveller, Mr. Victor Giraud, at the southwest end of Lake Tanganyika, and published by my friend Mr. Bourguignat in 1885, was called *Anceya; Anceyella* is also used in Conchology for a cyclostomoid shell. I propose for *Pristina* Anc. (Anceya, Pilsbry, not Bourg.), the name of *Pristiloma*. I also propose to name *Calospira*, Anc. (not Hall), after Mr. Averell, the honorable editor and publisher of "The Conchologists' Exchange," *Averellia*, Anc., and *Pœcilostoa*, Anc., after Mr. H. A. Pilsbry, *Pilsbrya*, Anc.

* * * * * * *

I have just received a very interesting form of *Gastrodonta multidentata*, Binney, collected by Mrs. George Andrews in the mountains of Eastern Tennessee. This shell which I distin-

guish as variety *umbilicaris*. is characterized by its more compressed form, less high body-whorl, larger umbilicus and by the absence (under a lens), of any radiating striæ. The shell under consideration is certainly not the same as *Gastrodonta significans*, Bland, also found in the same region. It is *not* whitish as is the latter, and is closer to multidentata than to any other.

In the same set of fine shells was a magnificent specimen of *Mesodon dentiferus*, Binney, of no less than 28 mill. in diameter, and of a coarser sculpture than in the type; this fine shell (from N. Carolina) which may be called var. major, is probably the same as the one mentioned by Mr. W. G. Binney in his "Manual of N. A. Land Shells," 1885, is of a darker colour and furnished with more impressed revolving lines than the northern form of the species.

C. F. ANCEY,
Feb. 1, 1887. Berrouaghia (Algiers).

NECROLOGY

The death of Professor Edward Olney, L.L.D., of Michigan University, is reported.

Dr. J. M. Wheaton, ornithologist, of Columbus, Ohio, is deceased.

M. Dubsc, the distinguished French electrician, is reported as having died in October.

Paul Morthier, Professor of Botany at the Academy of Neufchatel, Switzerland, has recently died.

M. Chancourtis, the noted French geologist and Professor in the School of Mines, died suddenly in Paris at a recent date.

Professor Elie Wartmann of Geneva, Switzerland, is dead.

Professor Alexander Boutlerow, Russian chemist, is dead at the age of 58.

M. Jules Bouis, an eminent French chemist, died on the twenty-first day of October, 1886, aged 84.

General John T. Beaulieu, F. R. S., founder of the system of magnetic observations in India, recently died at the age of 81 years.

The death of Dr. A. Fischer, a noted African traveler and scientist is reported.

Young Collectors' Corner.

RECORD OF A SHORT COLLECTING TOUR IN WHITE HARDIN & GALLATIN COUNTIES, ILL.

BY A. A. HINKLEY, DUBOIS, ILL.

WHILE collecting last August in White and Gallatin Counties, Illinois, the writer found *Lithasia obovata*, Say, in abundance in the Little Wabash and Saline Rivers. All specimens taken were covered with a dark ferruginous deposit which being removed presented a dark brown or olivaceous epidermis, many having two faint red bands on the body-whorl. All were decollate, from one to four whorls remaining. The full grown shells were usually .50 to .75 inches long and about .40 inches wide, some unusually large ones being over an inch long and .60 inches wide.

At the Ford of Saline River, near Saline Mines, the bed of the river is almost a level layer of rock with an abrupt fall of twelve to eighteen inches, below which for a short distance the water is broken into small, swift streams and shallow still places nowhere over a foot deep, enough rock being above the water to enable a person to explore the entire bed of the stream without wading. Here the Lithasias were found everywhere, but most numerous in the crevices at the fall, where were also found *Pleurocera*, *Vivipara*, *Melantho* and *Lioplax*. *Goniobasis costifera*, Hald., was common in all the small streams of Hardin County, presenting considerable variation.

VALVES.

Shark River near Key East, N. J. is a very interesting locality for the young conchologist to visit.

Mrs. Mary B. A. King, of Rochester, N. Y. is an enthusiastic collector of shells, although in her eighty-ninth year, and received great encouragement from the late Isaac Lea, L.L.D., who named the Unios and Anodontas in her collection upwards of forty years ago.

Professor John M. Holzinger of Winona, Minn., writes us that The Conchological Club of the State Normal School collected over 45 species of Univalves and 20 species of Bivalves last season in Winona County. The Club added many interesting specimens to its cabinet.

The latest report of the Liverpool Marine Biology Committee shows the great value of marine dredging. Prior to 1853, but 270 species of marine invertebrates were known. The Committee places on record 913 species, of which 235 have not before been found in the locality, 16 are new to British seas, and 7 species and 3 varieties are new to science.

A fine chance is presented to you on page 55 of this number whereby you may secure valuable books to aid you in collecting. A portion of your leisure time may be very profitably devoted to securing subscribers to this *your* paper, and thus we will be enabled to extend our acquaintance and you will receive a handsome reward.

Recipe for cleaning shells:—Mr. B. G. Seebach of Peru, Ill., kindly sends the following: Mix 5 lbs. Sal Soda in 5 gallons of hot water; after the soda has dissolved let the mixture cool. Then put the live shells to be cleaned in this and leave them there for 3 or 4 days. This softens the tissues and the fleshy portions can be removed easily without deteriorating the shells. The mixture may be made in smaller quantities but in the same proportions.

Mr. F. A. Sampson, of Sedalia, Mo., made a trip through Carroll County, Arkansas, in March, 1886, and succeeded in collecting a large number of land and fresh-water shells. His visit there and the lengthy list of shells collected, show that Carroll County is a locality of great interest to the conchologist.

The edible snail, (*Helix pomatia*, Linnæus) is used for food to such an extent in Europe and elsewhere that France and Italy export upwards of 1000 tons annually.

STRIÆ

Evelyn College, Princeton, N. J., is exclusively for young women.

The Linnæan Society has lately elected the Prince of Wales to honorary membership.

Professor Angelo Heilprin is the author of a new work upon the distribution of animal life.

Dr. Lightfoot, the well-known Rector of Exeter College, Oxford, is very ill and no hope is had for his recovery.

Rev. Dr. Henry G. McCook of Philadelphia, is delivering a course of Sunday afternoon sermons on "The Gospel in Nature."

It is said that Professor C. M. Woodward stands a good chance of succeeding Dr. Eliot as Chancellor of Washington University of St. Louis.

Professor D. G. Brinton delivered the first of a series of Friday evening lectures at the Academy of Natural Science, hiladelphia, on February 18th. His subject was "The Prehistoric World in Europe-Palæolithic Age."

Dr. Franz Boas well known for his explorations inthe regions about Baffin's Bay and Vancouver's Island, has resigned his position with the University of Berlin to assume charge of the Geographical Department of *Science*.

EVEN Siberia does not intend to be left behind in the race for improvement in science as news lately received states that a scientific and industrial exhibition will be held at Ekaterinburg from the twenty-seventh of May until the twenty-seventh of September, under the auspices of The Uralian Society of Lovers of the Natural Sciences.

Exchange Column.

Terms, which must be cash with order, are as follows: Exchanges of 20 words, including address, 10 cents; for each additional 10 words the charge will be 5 cents. No exchange will be inserted for less than 10 cents.

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WANTED:—American Journal of Conchology, seven vols, neatly bound, in exchange for shells. JOHN WALTON, 77 Arcade, Rochester, N. Y.

OFFERED:—Numerous species of European and exotic Coleoptera and land, fresh-water and Mediterranean shells in exchange for mollusks from the United States and foreign countries. FELIX ANCEY, 34 Montie de Lodi, Marseilles, France.

WANTED:—Eocene fossils named and localized in exchange for others. G. E. EAST, Jr., 241 Evering, road, Upper Clapton, Eng.

OFFERED:—Two hundred species of shells and Davies' "Egg Check List" in exchange for books on Conchology; send title and state the condition of your book and I will send you list of the shells. A. A. HINKLEY, Du Bois, Ill.

WANTED:—American correspondents interested in the study of the genus Pupa (including Pupilla, Vertigo, etc.), of the U. S. Duplicates and other shells for exchange. V. STERKI, M. D., New Philadelphia, O.

WANTED:—First 2 vol. Lea's Obs. Genus; Unio. Say's American Conchology; Gould's Invertebrata of Mass; Kiener's plates of Shells; Carpenter's works; Tryon's Monog. Terr. Moll. of U. S., Sowerby's Conch. Manual and Plates for offers in works on Conchology.

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Kirby and Spence. An Introduction to Entomology; or, Elements of the Natural History of Insects. With Plates; by Wm. Kirby and Wm. Spence; 4th edtn; 4vols. half morocco; London, 1822. Price $18— Regular price $20.

D'Orbigny, Charles M. Dictionaire Universal D'Histoire Naturelle, Dirige Par M. Charles D'Orbigny; 15 vols.— 12 vols. of text and 3 vols. of plates. half morocco; Paris, 1849. Price $70, Regular price $75.

Sowerby, J. Genera of Recent and Fossil Shells for the use of Students in Conchology and Geology. Illustrated with 264 original plates. 2 volumes, 8-vo; half morocco. London (N. D.). Price $15. Regular price $17.50.

Stephens, James and Francis. Illustrations of British Entomology; or, a Synopsis of Indigenous Insects, containing their generic and specific distinctions. Embellished with colored figures of the rarer and more interesting species. 12 volumes; half roan. London, 1828. Price $50. Regular price $55.

Lowe, E. T. Ferns, British and Exotic, 8 vols.; New and Rare Ferns, 1 vol.; British Grasses, 1 vol.; Beautiful Leaved Plants, 1 vol.; Illustrated with beautiful plates in colors. Together 11 vols., royal 8 vo; half levant-morocco; extra gilt tops. London 1872 Price $95. Regular price $100.

Woodward. Manual of the Mollusca, with Appendix by Ralph Tate. 642 pp: 23 plates, 441 figures, 270 illustrations. London, 1880 edition. Price $2.50 post-paid. Formerly $2.60.

The same, 1875 edtn, $2 post-paid.

Drury. D. Exotic Entomology. Illustrations of, wherein are exhibited upwards of 600 insects of the East and West Indies, China, New Holland, North and South America, Germany, etc., very few of which are figured in any other work. New edition with additions and Scientific Indexes by J. O. Westwood. 150 plates beautifully colored. 3 vols., 4 to. Half morocco, uncut. London 1837. Price $25.

"This exquisite work of Drury displays the complete insect in a degree of perfection that leaves nothing to be desired."—Sir James E. Smith.

Gould, John. A Century of Birds from the Himalaya Mountains. Folio; half morocco. (Scarce.) Price $70. Regular price $75.

Lowe, E. T. Beautiful Leaved Plants. Being a description of the most beautiful leaved plants in cultivation in this country. With 60 colored illustrations. 8-vo. Half morocco; extra gilt tops. London 1861. Price $10. Regular price $12.

Tryon, Geo. W. Jr. Structural and Systematic Conchology, and, also, Manual of Conchology. The latest works for Conchologists. Subscriptions taken and filled. Circulars sent on application.

SPECIAL NOTICE:—A few second hand copies of Tryon's Structural and Systematic Conchology for sale at $5.00—Cash.

Westwood, J. O. Arcana Entomologica; or, Illustrations of New, Rare, and Interesting Insects. 2 vols, half morocco. London 1845. Price $27.50. Regular price $30.

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trochoides, Gray . . 5

MELONGENA.

galeodes, Lam . . . 20

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multiplicata, Pse . . 10

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variabilis, Pse. . . . 3

POTAMOPYRGUS.

corolla, Gld . . . 5

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grande, Gray . . . 15

STROMBUS.

plicatus, Lam . . . 20
vittatus, L. 15
gibberulus, L. . . . 15, 20

TROCHUS.

maculatus, L. . . . 15, 20

TURBO.

Ticaonicus, Kiener . 20, 25

BIVALVES.

UNIO.

complanatus, Sol. . . 10, 15
camptodon, Say . . . 25, 20
cariosus, Say 15
conutus, Barnes . . 10
crassidens, Lam . . 10, 15
corrugatus, Lea (o. v.) India 15
cæruleus, Lea (o v.) India 15
ellipsis, Lea 10
elegans, Lea 10
foliatus, Hild . . . 15 to 15
multiplicatus, Lea . 20, 25
Shepardidianus, Lea 25
sulcatus, Lea . . 10, 15
pliciferus' Lea (Mexico) 15, 20
obesus, Lea 03
olivarius (o. v.) India 15
umbrosus, Lea (Mexico) 20
mytiloides. Raf. . . 20, 30
spinosus, Lea . . . 50 to 2 00

IRIDENA.

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MARGARITANA.

margaritifera, L. . . 10
ochraceus, Say . . . 10
rugosa, Barnes . . . 15, 20
confragosa, Say . . 20
undulata, Say . . . 15
marginata, Say . . 15, 20

The Conchologists' Exchange.

VOL. I. CHESTNUT HILL, PHILADELPHIA, PA., MAY, 1887. No. 11

A Publication Designed for Conchologists and Scientists generally.

ISSUED MONTHLY

BY

WM. D. AVERELL,

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YOUR attention is directed to the extracts from many letters received testifying to the value of "The Conchologists' Exchange," which we have published in this number. Our circulation is slowly but surely extending to all foreign countries, which will bring our readers eventually into communication with collectors located in all the desirable collecting grounds of the world. It remains for you to use this paper, not only for the purpose of advertising duplicates, but also as a medium for recording your own discoveries, for be they ever so humble, they will be acceptable so long as they reach our requirements; i. e. Exactness and Originality.

HAVE you duplicates for exchange? If so, do not wait for them to accumulate but advertise them in "The Conchologists' Exchange." One of our subscribers added nearly *four hundred* species to his cabinet through one advertisement costing him *ten cents*. What a rate of interest on the investment is this! Others succeeded as well and even better in the exchange of books, scientific instruments, fossils, &c., to all of which our columns are open.

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Walker, Bryant.
Wright, Dr. S. H.

BRIEF NOTES ON THE LAND AND FRESH-WATER SHELLS OF MERCER CO., ILL.

BY WILLIAM A. MARSH.

(Continued.)

25.—Unio multiplicatus, Lea.

A very rare plicate species found in the sloughs of the Mississippi River and in the lakes of the Bog Island. No more than a dozen specimens of this shell have been found within the boundary lines of this county to my knowledge. Those found here seem to be more inflated than those collected in Tennessee and Ohio streams. The species attains a large size.

26.—Unio Mississippiensis, Conrad.

A rare shell of the *Nasutus* group. Supposed to be identical with *Unio subrostratus*, Say, but a much larger shell. It is a rare species, found in the sloughs of the Mississippi River. I have never found it in the river. It seems to avoid running water, being found where the mud is quite deep.

27.—Unio occidens, Lea.

This is the female of *Unio subovatus*, Lea, and belongs to a natural group of some of the finest of our American species including *subovatus*, *ovatus*, *capax*, *ventricosus*, *ochraceus*, *Canadensis*, *excavatus*, *lineatus*, *satur*, *perdix*, *dolabræformis*, *cariosus*, etc. Its nearest congener here is *ventricosus*, Barnes. It inhabits our small streams only, where it was, years ago, quite abundant, but is now rarely found. *Occidens* is a very inflated shell having few rays, many specimens being devoid of them altogether. The nacre is white, sometimes pearly; the teeth are large and the shell sometimes attains an immense size. It seems to delight in muddy bottoms. The time is not far distant when this shell will be entirely extinct here, as will be the case with all our *Uniones* which make the creeks their sole habitation.

28.—Unio pustulosus, Lea.

This, as the name implies, is a pustulose species; subrotund in outline, and may be distinguished from other members of this group by its greenish color over the umbones. It is found only in the river and is a deep-water species, being found usually half buried in the beds of sand and gravel. It is sometimes thickly covered with pustules, while other specimens are nearly smooth. The nacre is usually white and pearly, but I have found a few having a slight pinkish tinge. It is very abundant here.

29.—Unio pustulatus, Lea.

A very fine pustulate species, with a dark brown or chestnut colored epidermis, easily separated from *pustulosus* by its fewer and larger nodules and its dark, concentric lines of growth. It is a river shell with habits very similar to *pustulosus*. I find that it is very rare here, having found not more than a dozen specimens during the many years of my collecting.

30.—Unio plicatus, Leseuer.

This plicate shell is found abundantly in the river, its sloughs and in the lakes of the Bog Island, preferring muddy bottoms, where it attains an immense size. It has a dark brown epidermis, but is quite variable in its interior. Some have a chalky white nacre; some are shining and iridescent, others have a dull, salmon-colored nacre, while many are tinged with purple all around the margin of the shell. The young of this species are very globose and much inflated. On some specimens (especially when young), the folds are very obscure.

31.— Unio parvus, Barnes.

This little species is found quite commonly in every portion of our county where there is water having a muddy bottom. It has a very dark brown epidermis, rough and striate with beautiful undulations on its beaks, and a bluish white nacre. At certain seasons it is very active, and is the first species to claim the attention of the collector in early spring.

32.—Unio pressus, Lea.

An inhabitant of Pope and Edwards Creeks where it is found very rarely. It seems to have habits very similar to *Unio spatulatus*, being found in localities where iron ore is abundant, and is found buried in piles of loose stone and gravel. As found here it is always beautifully rayed.

33.—Unio rectus, Lam.

This fine species inhabits the deep water of the Mississippi and is seldom found near the margin. It is a smooth, wide species and in many respects resembles *gibbosus*, but it is very distinct from that species as the undulations on its beaks are not so coarsely granular, it has a smoother epidermis, it is more beautifully rayed and is generally much straighter on both its dorsal and ventral margins. The male differs greatly from the female in outline. Some specimens have a pink nacre, others are white inside, while most of those found here are of a pale pink color in the beak cavity gradually fading to a pale rose color towards the anterior and posterior portions of the shell. The species often attains an immense size and is found in the Mississippi River and all streams emptying into it, from Minnesota to Arkansas.

To be continued.

PLANORBIS DILATATUS, GOULD, IN ENGLAND.

BY THOMAS ROGERS, MANCHESTER, ENGLAND.

During the Summer of 1869, I found a *Planorbis* in one of the canals near Manchester which, after some investigation, was determined by Dr Gwyn Jeffreys as the *Planorbis dilatatus*, Gould. Shortly after this discovery I found it again in another canal on the opposite side of the city, some five miles apart. The conditions under which it was found were similar in every respect, viz: near a cotton mill, where the refuse from the blowing room (cotton cleaning), was blown over and about the canal and where, in close contiguity, the warm water from the condensing engines ran into the canal and raised the temperature of the water a great many degrees higher than the other parts of the canal. From the foregoing facts Dr. Jeffreys and I concluded that the species had been introduced from America with the cotton used at some period by the mills. And I further surmised that the introduction had been made during the English cotton famine brought about by the war between the North and the South when cotton played a considerable part in the transactions of that severe struggle and when Lancashire people were glad to get it in any condition, wet or dry, blockade-run or otherwise.

Coming to this conclusion in reference to its introduction in England, Dr. Jeffreys wrote about that time to Mr. John G. Anthony, the eminent American conchologist, who said that he did not think that *Planorbis dilatatus*, Gould, occurred in any of the cotton growing states, and that in his opinion it was essentially a cold water species. He also said that the species had been described from specimens collected in a pond near Cincinnati, Ohio, and named by Mr. Lea as *P. lens*, but as that name was subsequently found pre-occupied by a fossil species, it was named by Dr. Gould as *Planorbis dilatatus*. In a subsequent letter to Dr. Jeffreys, dated December, 1869, Mr Anthony said that he had written to Mr. Lea and other conchologists for further information as to localities where it was found.

During the year 1871, Dr. Jeffreys paid a visit to America and brought home to England two specimens of the *Planorbis*, one of which he sent to me. This lack of specimens which he brought, and their absence from the collections of American shells in England, have led me to suppose that the species is somewhat rare in the United States, and it has occurred to me that some further information might be acquired through the pages of your excellent "Conchologists' Exchange" and that it might be interesting to your American readers to find out or record the distribution of this species, its habitats and its relative scarcity or abundance, and whether it would be likely to have attached itself to submerged cotton when used for defensive purposes during the war before mentioned.

DESCRIPTION OF NEW GENERA OR SUBGENERA OF HELICIDÆ.

BY C. F. ANCEY.

(Continued.)

XII. Möllendorfia, Ancey. "Testa medi-"ocris, solidula, convexo-depresso, aperti um-"bilicata, griseo vel nigro-vinosa, haud nitens, "seriebus, verrucarum eximie pustulata. An-"fractus 5, ultimus antice plerumque breviter "solutus et perdeflexus, rotundatus, infra con-"vexus. Apertura obliqua, ringens, alba, extus "scrobiculata. Peristoma reflexum, album."

Types. Helix trisinuata, Mart.; H. Hensaniensis, Gredler; H. Eastakeana, Möllendorff.

Geog. distribution: Central and Southern China (Valley of the Yang-tse-Kiang); Tonkin.

Some of these shells have been referred to Cepolis by Pfeiffer, while Gredler put his Hensaniensis in Polygyra,a strictly North American genus! They are a very distinct group, with a singular sculpture and peculiar features.

XIII. Trichelix, Ancey. "Testa medio-"cris staturæ, tenuiuscula, pilis rigidis horrida, "corneo-fulva, umbilicata. Spira concava; "anfractus regulariter crescentes, ultimus maxi-"mus, turgidus, antice deflexus. Apertura "obliqua, extus scrobiculata, dentata. Peris-"toma labiatum et reflexum."

Type. Helix horrida, Pfeiffer.

Geog. distribution: Mountains of Laos.

XIV. Entodina, Ancey. "Testa parvula, "compressa, orbicularis, subtenuis, striata, flav-"ula, parum nitens, late et perspective umbili-"cata, Anfractus regulariter crescentes nec "artispirati, ultimus depressus, antice deflexus. "Apertura obliqua, breviter soluta, dentibus 4 "profunde in palato sitis armata; peristoma "breviter expansum, continuum, in callo mar-"gines jungente tuberculo prominulo instruc-"tum."

Type. Helex Reyrei, Sowerby.

Geog. distribution; Pacific coast (Ecuador).

This singular little shell has very striking characters. It cannot be collocated in Polygyra or Systrophia.

XV. Tetrodontina, Ancey. "Testa sub-"globosa, solida, cretacea, plerumque unifas-"ciata, umbilico sat parvo cylindrico prædita "Anfractus 5-7 arcte convoluti, spiram subcon-"icam apice obtusam formantes, ultimus altus, "tumidus, rotundatus, antice non deflexus. "Apertura minus obliqua intus dentibus 4 mu-"nita, scilicet: 2 in pariete duobusque in inter-"iore marginis basalis albo incrassati leviterque "expansiusculi."

Types. Helix Yantaiensis, tetrodon and Honaiensis.

Geog. distribution: Valley of the Hoang-ho (North China). It is found fossil in the Löss.

XVI. Rhyssotopsis, Ancey. "Testa similis "characteribus plerisque Rhysota, Albers, sed "multo minor typicis speciebus, fragilior, fusca "et spiraliter tenuiter striatula."

Type. Helix Haughtoni, Benson.

Geog. distribution: Andaman Islands.

XVII. Ophiospila, Ancey. "Testa affinis "gen. Solaropsidi, sed multo minor, cicatrice "semper destituta, haud angulata, plerumque "paucispirata, tenuis, tenuissime granulata, "fascus interruptis exiguis signata et peristo-"mate sinuato, haud reflexo.vix ad columellam "subexpanso prædita. A Psadara differt testa "minore, tenuius granulata, haud hirsuta, spira "convexiuscula et aperturæ characteribus."

Types. Helix Kuhni, Pfeiffer; H. andicola Pfeiffer: H. catenifera, etc.

Geog. distribution: Guyana. Columbia.

To be Continued.

NEW LOCALITIES.

Editor Conchologists' Exchange:

Sir: Please report the following new localities:

Triton Swifti, Tryon. Reported in Tryon's Manual only from Isle of Antigua, W. I., on authority of R. Swift. Several fine specimens of this shell were received from Miss Annie Peniston, collected in the Bermudas.

Carychium exiguum, Say, was found by the writer in a wet hummock near Palma Sola, Florida. Not hitherto reported from the States, I believe.

Succinea lineata, W. G. B., is abundant in this vicinity in pools of alkali water, near the South Platte River, in early Spring.

CHAS. T. SIMPSON,
April 9, 1887. Ogalalla, Neb.

Editor Conchologists' Exchange:

Sir: Mr. E. P. Sampson, of Saco, Maine, has found specimens of *Pholas truncata*, Say. at Scarboro, Maine. It has been said never to have been found North of Cape Cod, before.

EDW. W. ROPER,
April 10, 1887. Revere, Mass.

STRIÆ.

Professor Francis M. Burdick formerly of Hamilton College, has joined the Cornell faculty.

Professor Mobius of Kiel has become the Director of the Zoological Museum at Berlin.

Professors Hadley, Farnum and Ripley of Yale expect to make a pedestrian tour of Switzerland in June.

Rev. Dr Charles H. Seymour, an alumnus of Trinity College, Hartford, has been elected President of Griswold College, Davenport Iowa.

Professor Young of Princeton, will accompany a party of Russian and English astronomers who will observe the total eclipse of the sun in August next in Kireshama, Russia.

In the British Museum, books on Natural history are bound in green, historical works in red, theological in blue, and poetical works in yellow.

John A. Ryder, Professor of Comparative Embryology in the University of Pennsylvania, has brought the artificial propagation of the oyster to such perfection that its success seems to be assured.

Dr. Albert Kellogg whose death is announced in another column, was the associate of Audubon, in Texas, as well as the botanist of the first Government expedition to Alaska after its purchase.

The French Association for the Advancement of Science, aided by some of the Parisian Medical Societies, have purchased a building in Paris which they will convert into a house for scientific societies.

SUCCINEA LINEATA. W. G. B., IN NEBRASKA.

BY CHARLES T. SIMPSON.

UNDER the head of "New Localities" this shell is mentioned as having been found in alkaline pools near the South Platte River in early spring, and I should like to add that it matures rapidly, attains its full size and dries before the heat and dry weather of summer comes on. It is found abundantly scattered over the prairies in a worn condition and also in stratified soil to the depth of a hundred feet, semi-fossil. I have collected it in a fresh condition under rocks and upon hills in the dryest localities. Mr. Binney described it from dead, faded specimens, and hence he could not be certain about the color. In texture the shell is much like *Succinea campestris*, Say, rather solid, and is covered with a coarse, yellowish epidermis which soon loosens on exposure after the animal dies.

NECROLOGY

Prof. E. L. Youmans, January 11 1887.

Rudolph von Uechritz, botanist, died November 21, 1886.

Dr. S. A. T. Tuelberg. Scandinavian botanist, died December 15, 1886.

Don Francisco Loscos y Bernal, Spanish scientist, died Nov. 1886, aged 63.

The death of Dr. Albert Kellogg, a distinguished Californian botanist, at Alameda, California, is announced.

Current Comment.

FROM OUR FRIENDS TESTIFYING TO THE VALUE OF "THE CONCHOLOGISTS' EXCHANGE."

"Cannot afford to miss a single number."

* * Now that your paper is assuming such proportions, not only in size but in the articles published, I cannot afford to miss a single number, nor a single item. John Walton, Rochester, N. Y.

"Much interested."

* * I do not wish to lose a copy, for I am much interested in the Paper. E. J. Smith,
Natick, Mass.

"Solid and valuable."

* * Allow me to congratulate you on the present number of "The Conchologists' Exchange." It is a solid, valuable number. Chas. T. Simpson,
May 4, 1887. Ogalalla, Neb.

"Very valuable."

I acknowledge receipt of Nos. 5 and 6 of a very valuable publication styled "The Conchologists' Exchange," the perusal of which has proved so interesting to me that I should like to possess all the numbers from the beginning, and to become a regular subscriber for the future. Henry Vendryes, Kingston, Jamaica.

"Worth the money."

Enclosed please find my subscription for "The Conchologists' Exchange." I think it worth the money.
J. W. Velie, M. D.,
Academy of Sciences, Chicago, Ill

"It will prove of much benefit to conchologists."

I am much pleased with the appearance of your paper and I thing it will prove of much benefit to conchologists. George W. Michael, Jr., Morro, Cal,

"Quite efficacious."

Your "Conchologists' Exchange" is proving quite efficacious. I have already made several exchanges and have received many letters from persons all over the United States, asking for shells. I would not be surprised if you had struck on a plan that would eventually be of much benefit to conchologists.
Wm. A. Marsh, Aledo, Ills.

"Promises to become a valuable publication."

Allow me to thank you for your kindness in sending to me the first numbers of "The Conchologists' Exchange." It promises to become a valuable publication for persons interested in the Mollusca.
Charles Prosser, Instructor,
Ithaca, N. Y. Cornell University.

"A perpetual surprise."

The little exchange notice you inserted for me has been the means of adding *several hundred species* to my cabinet. "The Conchologists' Exchange" is a perpetual surprise. I could not get along without it. I aim to put the sample copies you send where they will do good. George W. Puterbaugh, Greenfield, Ind.

"An admirable publication."

I return you my thanks for the specimen copies of "The Conchologists' Exchange" which is an admirable publication. J. Matthew Jones,
Halifax, Nova Scotia.

"Convenient."

I like your convenient "Conchologists' Exchange" very much. Enclosed please find subscription commencing with Vol. I. Wm. Sutton,
San Francisco, Cal.

"Wants an enlargement."

The collectors will soon demand an enlargement of your convenient publication. H. A. Pilsbry,
Sept. 23, 1886. Davenport Acad. of Sciences, Iowa.

[They have it.—Ed. May, 1887.]

"We have needed just such a paper."

I have just returned home and found your bright little "Exchange" awaiting me. We have needed just such a paper. J. A. Singley, Giddings, Tex.

[The above are a few extracts from several score of similar letters, showing the esteem in which we are held. We wish to increase our subscription list very largely and would thank our subscribers to see that all their friends subscribe as well, and would again invite their attention to our premium list upon another page.—Ed.]

Young Collectors' Corner.

HOW TO COLLECT SMALL LAND SHELLS.

BY V. STERKI, M. D., NEW PHILADELPHIA, O.

IT is well known that many small land shells are found under and in decaying wood, stumps, logs, and under loose bark, etc., and in such localities they may be picked up by hand or with the aid of a knife's point or a pair of pincers. Especially during late autumn, open weather in winter, and early spring, these little species can be found in great numbers in their winter quarters, as well as the larger varieties. But it may not be generally known that almost all of them like animal matter for food. The fact that they have been found accidentally in considerable numbers in skulls, etc., makes it advisable to place large pieces of bone with open cavities, such as the head of a sheep (which may be obtained from any butcher), at suitable localities, well secured by heavy stones, logs, or wire against rapacious animals, thus forming traps, as it were, to be visited from time to time for the small *Hyalinas*, *Pupas*, etc., living upon and in them. Pieces of wood covered with lard will answer the same purpose.

In collecting shells never fail to look for them under plants with broad or numerous leaves spread on the ground and about the roots. A few weeks since upon a single stalk of Iris, standing on a dry gravelly bank, I collected in a half hour's time, more than 200 *Pupa armifera*, Say, besides some *Pupa contracta*, Say, *Pupa pentodon*, Say, *Pupa curvidens*, Gld. (a peculiar, slender form), *Pupa fallax*, Say, and *Hyalina minuscula*, Binney, a part of them, of course, being weathered and poor.

One of the best ways and perhaps the most expedient, is the following, used by me for years in both Europe and America:

Carefully gather moss in patches from rocks together with the grass and dead leaves with the same, and especially the layer of decaying moss under these latter, by hand, or better, with a small rake provided with strong, closely-set teeth, and place it upon a large piece of strong paper, or cloth about the size of a bed sheet, the corners of which are provided with loops to be fastened to the ground by pegs to prevent removal by the wind. If time allows let the moss get dry, then shake and rub it gently, removing the coarser parts; for this purpose a sieve will do excellent service. The remaining fine parts, "rubbish" (?) should be placed in a collecting bag and carried home to be treated in the way indicated for "Drift," in No. 8 of "The Conchologists' Exchange." During journeys, when time is limited, this is the best method to adopt. The dust under loose bark should be brushed down from both sides; the finer parts about plants should be gathered up and the examination continued afterwards at home.

Shady or moist hillsides, where short grass grows mixed with moss, are desirable places, and collecting is best done in the described manner at any time in the year, if the weather is open. Where there are rocks, sweep them with a strong brush in a suitable receptacle, such as a pasteboard box (I have used an old umbrella for the purpose); do the same with trees, upon which you may find the smallest species clinging, taking care to examine the bases of rocks as well. Care must be taken to add to the gathered moss *in each instance*, a label of strong paper or parchment indicating the locality of collecting and its natural features, kind of soil, grade of moisture or dryness, state of vegetation, and the date of collecting. When collecting in mountainous region, the height above sea level should be mentioned. The labels should be previously impregnated with salt or anything else preventing the mollosks devouring it.*

Many small species, living in moist places have to be looked for along the banks and at

*We would suggest a square, tin label, with clipped corners, upon which the inscription may be written with a penknife.—ED.

the very edge of waterways of all kinds. Some of them like to ascend reed-grass, etc. Such specimens should be collected by gently bending the reed over an inverted umbrella, and then striking it with a stick.

These few hints may seem wholly or partially unnecessary to an experienced collector, but I think they will be of some value to our young friends. If you will allow me, Mr. Editor, I shall add in the next issue, a few words concerning the treatment of the shells.

VALVES.

Professor Josiah Keep, in his popular little work, "California Shells," gives the following directions for preserving Chitons: "Chitons are hard to preserve in proper shape; it may be done, however, by tying them flat to a shingle with candle wicking, and placing them in fresh water. After they are dead and the muscular mantle has lost its contractile power, they must be loosened from the shingle and the viscera removed with a sharp knife.

If you have shells, books, scientific instruments or natural history specimens to exchange, use the columns of "The Conchologists' Exchange," and you will dispose of them.

We have collected many specimens of *Margartana* from the large timber rafts on the Susquehanna River during the summer weather; and you may do likewise.

NOTE.—Our exchangers have secured from 50 to 400 new species by means of *one* advertisement. Try printer's ink and be convinced.

Mention is make in Woodward's Manual of the Mollusca, of a *Helix hortensis* which got entangled in a nut-shell when young, and growing too large to escape, had to endure the incumbus to the end of its days.

Should you desire to secure a premium from the fine list we offer, we will send you a blank for the names of "New Subscribers," upon application.

The 15th annual report of "The Zoological Society of Philadelphia" was submitted at the meeting held April 28th. It shows a membership of 529 and earnestly requests the names of new members. Donations to the permanent fund may be sent to Mr. Jos. R. McElroy, 205 South 6th St., Philadelphia.

From numerous letters received we infer that many are collecting solely for the sake of possession. While it is of course desirable that each collection be complete as possible, collecting in this way is like an ignorant man buying books—he may admire rich binding and have sufficient artistic sense to appreciate harmonizing colors, but he cannot derive intellectual enjoyment therefrom. So in collecting, unless the young student carefully investigates the character and habits of each little specimen, his collection can never be anything more than a toy, beautiful perhaps, but lacking that broad educational power that individual investigation alone will bring.

Very satisfactory results have been obtained by some collectors of shells in studying certain genera, and after an apparent limit has been reached, in turning their attention to others. Such a course does not result in a general knowledge of Conchology, which is far more desirable, but has a tendency to make its followers authorities on the groups studied. In certain localities no better result can be obtained owing to geographical features, but all things being equal, it is better for the young to have a good general conchological education than to confine their attention to a single branch of the study and to fail through lack of material. Just here is where our paper helps to bring you into communication with the rest of the shell world and is a useful medium for you to trade ideas as well as shells. Do not hesitate to use it. We wish our young friends to feel they own a share in this Corner of our paper, and while we cannot promise to publish all we receive, every communication will have our careful personal consideration and we will endeavor to make room at least for extracts from those displaying most careful and original investigation.

Exchange Column.

Terms, which must be cash with order, are as follows: Exchanges of 20 words, including address, 10 cents; for each additional 10 words the charge will be 5 cents. No exchange will be inserted for less than 10 cents.

75 cents per annum for a monthly exchange of 20 words; $1.00 per annum for a monthly exchange of 30 words, with privilege of change each month.

OFFERED:—American Journal of Conchology, seven vols. neatly bound, in exchange for shells.
A large *fresh* lot of Uniones, nasutus, complanatus and luteolus: also, a few Melantho decisa, all in excellent condition, to exchange for other fresh-water shells of the South and West. JOHN WALTON, 77 Arcade, Rochester, N. Y.

OFFERED:—Tellina radiata, Paludina integra, Strombus gigas, Modiola plicatula, Mytilus edulis, Crepidula unguiformis, Lævicardium serratum, Columbella mercatoria, Limnæa elodes, for land and fresh-water shells. WM. WEEKS, Jr., 508 Willoughby Ave., Brooklyn, N. Y.

OFFERED:—Minnesota and marine shells for other shells and minerals. Send lists. JOHN M. HOLZINGER, State Normal School. Winona, Minn.

OFFERED:—Numerous species of European and exotic Coleoptera and land, fresh-water and Mediterranean shells in exchange for mollusks from the United States and foreign countries. FELIX ANCEY, 34 Montie de Lodi, Marseilles, France.

WANTED:—Eocene fossils named and localized in exchange for others. G. E. EAST, Jr., 241 Evering, road, Upper Clapton, Eng.

OFFERED:—Two hundred species of shells and Davies' "Egg Check List" in exchange for books on Conchology; send title and state the condition of your book and I will send you list of the shells. A. A. HINKLEY, Du Bois, Ill.

WANTED:—American correspondents interested in the study of the genus Pupa (including Pupilla, Vertigo, etc.), of the U. S. Duplicates and other shells for exchange. V. STERKI, M. D., New Philadelphia, O.

TERTIARY and other fossils from Southern State and Europe; 50 species of Birds' Eggs, and 100 pounds of Minerals consisting of Amethyst on Agate; Agate rough and polished: Pyromorphite: Native Copper Zinc blende: Galena: rare Iron Ores, &c., &c., for strictly fine and correctly named Mollusca from South and Central America, Asia, Africa, and Australia.
Address, W. D. AVERELL,
Chestnut Hill, Phila.

OUR PREMIUM LIST.

A CHANCE FOR WORKERS KEEN AND BRIGHT.

Send $1.75 and the names of 5 subscribers, and we will forward to the originator of the club, one copy of Dr. Hays' "Descriptions of the Inferior Maxillary Bones of Mastodons," 29 plates; or, in lieu thereof, 50 cents' worth of shells at List prices.

Prof. J. E. Kingsley's "Naturalists' Assistant," 228 pages, will be sent post-paid for $5.25 and the names of 15 subscribers.

Woodward's "Manual of the Mollusca," 1880 edition, will be sent free for $10.50 and the names of 30 subscribers.

Tryon's "Structural and Systematic Conchology," cheap edition, will be sent free for $17.50, and the names of 50 subscribers.

Tryon's "Monograph of the Terrestrial Mollusca of the United States," plain edition, will be sent free for $35 and the names of 100 subscribers.

Sowerby's "Genera of Recent and Fossil Shells," 264 plates, ½-morocco, 2 volumes, 8vo. sent free for $52.50 and the names of 150 subscribers.

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For $87 50 and the names of 250 subscribers, we will send, express prepaid, one of

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mounted upon a brass tripod stand with adjustable eyepieces, object glasses and diaphragm complete. A fine chance for an active worker.

A COMMISSION of 25 per cent. in CASH will be paid in lieu of the above premiums.

NOTE.—Parties desiring to secure the benefits of the above truly liberal offers, must not keep the names of subscribers together with the subscriptions, until they have completed their list, but should send them soon as received and we will keep an exact account of them.

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Kirby and Spence. An Introduction to Entomology; or, Elements of the Natural History of Insects. With Plates; by Wm. Kirby and Wm. Spence; 4th edtn; 4vols. half morocco; London, 1822. Price $18—Regular price $20.

D'Orbigny, Charles M. Dictionaire Universal D'Histoire Naturelle, Dirige Par M. Charles D'Orbigny; 15 vols.— 12 vols. of text and 3 vols. of plates. half morocco; Paris, 1849. Price $70, Regular price $75.

Sowerby, J. Genera of Recent and Fossil Shells for the use of Students in Conchology and Geology. Illustrated with 264 original plates. 2 volumes, 8-vo; half morocco. London (N. D.). Price $15. Regular price $17.50.

Stephens, James and Francis. Illustrations of British Entomology; or, a Synopsis of Indigenous Insects, containing their generic and specific distinctions. Embellished with colored figures of the rarer and more interesting species. 12 volumes; half roan. London, 1828. Price $50. Regular price $55.

Lowe, E. T. Ferns, British and Exotic, 8 vols.; New and Rare Ferns, 1 vol.; British Grasses, 1 vol.; Beautiful Leaved Plants, 1 vol.; Illustrated with beautiful plates in colors. Together 11 vols., royal 8 vo; half levant-morocco; extra gilt tops. London 1872 Price $95. Regular price $100.

Woodward. Manual of the Mollusca, with Appendix by Ralph Tate. 642 pp: 23 plates, 441 figures, 270 illustrations. London, 1880 edition. Price $2.50 post-paid. Formerly $2.60.

The same, 1875 edtn, $2 post-paid.

Drury. D. Exotic Entomology. Illustrations of, wherein are exhibited upwards of 600 insects of the East and West Indies, China, New Holland, North and South America, Germany, etc., very few of which are figured in any other work. New edition with additions and Scientific Indexes by J. O. Westwood. 150 plates beautifully colored. 3 vols., 4-to. Half morocco, uncut. London 1837. Price $25.

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Gould, John. A Century of Birds from the Himalaya Mountains. Folio; half morocco. (Scarce.) Price $70. Regular price $75.

Lowe, E. T. Beautiful Leaved Plants. Being a description of the most beautiful leaved plants in cultivation in this country. With 60 colored illustrations. 8-vo. Half morocco; extra gilt tops. London 1861. Price $10. Regular price $12.

Tryon, Geo. W. Jr. Structural and Systematic Conchology, and, also, Manual of Conchology. The latest works for Conchologists. Subscriptions taken and filled. Circulars sent on application.

SPECIAL NOTICE:—A few second hand copies of Tryon's Structural and Systematic Conchology for sale at $5.00—Cash.

Westwood, J. O. Arcana Entomologica; or, Illustrations of New, Rare, and Interesting Insects. 2 vols, half morocco. London 1845. Price $27.50. Regular price $30.

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THE CONCHOLOGISTS' EXCHANGE,
CHESTNUT HILL, PHILADELPHIA, PA., U. S. A.

The Conchologists' Exchange.

VOL. I. CHESTNUT HILL, PHILADELPHIA, PA., JUNE, 1887. No. 12

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ISSUED MONTHLY

BY

WM. D. AVERELL,

EDITOR AND PUBLISHER.

☞ Correspondence upon Conchology, as well as reliable items of interest concerning the Mollusca, their habits, localities, etc., kindly solicited from all.

Matters for publication must be received by the fifth of each month.

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SUBSCRIPTIONS TO VOLUME II, BEGINNING WITH JULY NEXT, ARE NOW DUE.

WITH this number we finish the first year of our journalistic existence. One year ago we spent a much-needed vacation in doing little else but thinking about the needs of American conchologists. The outcome of that thought was a postal card which we rather timorously styled "Volume I, Number 1," and announced that it was the first number of "The Conchologists' Exchange." Since that time, with the aid of our friends (and we trust every subscriber is a friend), our paper has increased in size and, if we are to believe the many testimonials we have received, in usefulness as well.

"THE CONCHOLOGISTS' EXCHANGE," in its present form involves a greater outlay for printing than formerly, as you can readily see. That being the case, we feel called upon to ask a slightly increased subscription price for Volume II, and to show you that we are liberally inclined, we promise to give *in each number*, information to the value of a year's subscription and also beg leave to announce that, beginning with the July number, we propose to throw open the "*Exchange Column*," to the *free* use of all subscribers. Now, as we have declared our intentions, we must ask you to send us *fifty* (50) *cents* as the subscription price of Volume II. We trust you will all respond to this very reasonable increase in price and that the dividend declared will meet with no fault-finding among the stock-holders.

A FITTING companion to the very able articles by Mr. C. F. Ancey, Mr. Wm. A. Marsh, and Dr. A. Sterki, has been found in the "Shell-bearing Mollusca of Rhode Island," by Mr. Horace F. Carpenter, whose reputation for accuracy in describing the Mollusca, is so well-known. This article is a continuation of the articles on the same subject, published in "Random Notes on Natural History," the discontinuation of which, in December last, we noted in a former issue. We can furnish our readers with the back volumes of "Random Notes," containing the former numbers of Mr. Carpenter's interesting history of Rhode Island shells, with the exception of Nos. 1 and 2, which, however, were only general in their treatment of the subject. Please see advertisement.

BRIEF NOTES ON THE LAND AND FRESH-WATER SHELLS OF MERCER CO., ILL.

BY WILLIAM A. MARSH.

(Continued.)

34.—Unio rubiginosus, Lea.

A very variable species which inhabits Pope and Edwards Creeks. I have never found it in the river. It varies much in outline. Sexual differences are quite marked; the females being more inflated and slightly emarginate. It has a dark brown or rubiginose epidermis sometimes of a greenish or yellow tinge, velvety in texture, and usually has a white nacre, often shining and iridescent. Some have a very pale rose-colored nacre, while others are of a light salmon color. This abundant and widely distributed species often bears strong resemblance to a number of both northern and southern described forms. It is often found associated with both *coccineus* and *trigonus* and is then difficult to separate from them unless the collector familiarizes himself with the specific differences of the three forms. It differs from *trigonus* in being more depressed, more elongated, more rounded over the umbones, in having lighter cardinal and lateral teeth and very much *less prominent* growth lines. Its beaks are less ponderous and the undulations also quite different. It differs *here* from *coccineus* in having a darker and rougher epidermis, in the undulations of its beaks, in its teeth, and general outline and color of its nacre. In our creeks it is an active species and is found in all kinds of situations; on the sandy bars, in the gravel, under the projecting edges of large rocks, in water very highly impregnated with iron ore, in the mud, and even under logs submerged in the water.

35.—Unio solidus, Lea.

An inhabitant of the deep water of the Mississippi River. This is a rare shell and I consider it extraordinary good luck to find three or four specimens in a season. As its name implies it is a thick, solid shell, epidermis dark reddish brown, growth lines smooth, beaks smooth and massive and slightly incurved, rays dark green or dark brown. It is a very distinct species, yet, judging from the many names I have received it under from collectors, it is not well understood. Of our local species, it most resembles *trigonus*. The *Unio plenus* and the *catillus*, of Conrad, are often mistaken for this shell, but its green or brown rays, rounded umbones and massive beaks will, however, always distinguish it from those forms. The color of the interior varies from white and light rose to a beautiful pink and even salmon color.

36.—Unio spatulatus, Lea.

This species is found only in Pope and Edwards Creeks and never in the river. It was once very abundant here but, owing to the constant ravages of hogs, coons and musk-rats, it is now nearly extinct. It is a fine shell, covered with dark-green rays, slightly undulate, and in this character it much resembles *ligamentinus* with which it groups. Its cardinal teeth are small, and when found in iron ore water they are always stained with that substance. The animal seems to prefer gravelly situations, and very frequently buries itself so deeply in sand or gravel that it is difficult to find.

37.—Unio subovatus, Lea.

This species is found very sparingly in Pope and Edwards Creeks. It is the *male* of *Unio occidens*, Lea, and in many respects is strikingly similar to *ventricosus*, Barnes. It often attains an immense size and is provided with very large beaks and teeth. Its surface ornamentation is extremely variable, for while some specimens are provided with beautiful green rays, varying greatly in width, others are found with a few dull rays over the anterior portion of the shell, while others still are entirely devoid of rays.

38.—Unio securis, Lea.

Found rarely in the Mississippi River and in Swan Lake on the Bog Island, and always in deep water. A smooth, triangular shell, very solid, and usually very beautiful. Epidermis smooth, varying from yellow to green and brown color. The rays are remarkably variable, some being straight, others zigzag with blackish or brown dots in all imaginary shapes. Its beaks are very much compressed and very flat over the summit, while its umbones are very angular. The nacre is usually white, shining and iridescent, but I have found specimens having pink and salmon-colored nacres. Sexual differences are very apparent; the female being very much inflated and truncated. The species is slow in its movements and moves about but little. *Securis* is so distinct that when once known it need not be confounded with any other.

39.—Unio Schoolcraftii, Lea.

This species is found only in Edwards Creek and is now rare. It is a pustulose species and in some respects resembles *U. pustulosus*, but the careful observer will notice differences in outline, as it is quadrate, while *pustulosus* is subrotund and, again, it is always much less inflated. It has the same greenish tint over the beaks and umbones, but it is *spread on*, so to speak, in a different manner. When young, *Schoolcraftii* has but few pustules, but as it increases in age (usually), is found almost completely covered with them. The epidermis is very dark brown in adult specimens, The teeth and cicatrices are quite different from *pustulosus*. The nacre is white and shining, always much thicker before than behind in all except the very aged specimens, in which the nacre is of a rusty iron ore color. It is a very active species and may be found in all situations; in the iron ore beds, in the gravel, in the mud and in both deep and shallow water. Often, owing to its activity, it gets left upon dry land, as it will venture along the margin of the stream where the water is not deep enough to cover its shell, and, by a sudden fall of the water it is left upon the dry sand. At a place of this kind, below Fender's Grist Mill when the waters are shut off every Saturday evening, the collector may find numbers of this species, together with *parvus* and *rubiginosus* which have been suddenly left in the sand by the receding waters.

To be continued.

DESCRIPTION OF NEW GENERA OR SUBGENERA OF HELICIDÆ.

BY C. F. ANCEY.

(Continued.)

XVIII. Coxia, Ancey. "Testa valde de-"planata, latissime umbilicata, tenuis, subcornea, "supra minus micans, infra nitidior. Spira "plana, apice prominulo, arctispirata, anfracti-"bus numerosis, ultimo supra acute angulato, "infra convexo. Apertura parva, sinuata, ad "carinam angulata. Peristoma obtusatum, vix "inferne expansiusculum."

Type: Helix Macgregori, Cox.

Geog. distribution: New Ireland.

This group differs from Systrophia and from Ophiogyra in being carinated above the periphery and in having the apex elevated above the level of the following whorls. The distribution is not the same.

XIX. Lejeania, Ancey. "Testa forma "Xerophilis quibusdam sen Fructicolis vicina, "tenuis, anfractibus sat celeriter crescentibus, "convexo depressa, spira convexa, subobtecte et "mediocriter umbilicata, cornea fasciis opace "albis zonata vel alba opaca cum zonis angustis "nigris. Apertura obliqua; peristoma tenuis, "simplex acutum, rectum, ad umbilicum expan-"sum."

Types: Helix Darnaudi, Pfeiffer; H. Isseliana, Morelet; H. Jickeliana, Nevill, etc.

Geog. distribution: Mountains of Abyssinia; Sennaar.

XX. Pseudiberus, Ancey. "Testa solida, "opaca, non nitens, costulata vel striata. Spira "plus minusve elevata, obtusa; anfractus "parum convexi, interdum carinati, sutura "lineari, modice crescentes; ultimus carinatus. "Apertura obliqua angulata. Peristoma album "reflexum, incrassatum. Habitu et textura "testæ Iberos (Europæ incolas) valde com- "memorans: Umbilicus apertus."

Types: Helix tectum-sinense, Mart.; H. Zenonis, Gredler; H. plectotropis, Mart., and Mataianensis, Nevill.

Geog. distribution: China (in Northern provinces); Central Asia (Eastern Turkestan, Songoria, Mounts Tian-schan).

Allied to Plectotropis; more coarsely sculptured, shell heavier, peristome thicker and whitish; the texture of the shell is quite different and the general appearance is much like that of Helix scabriuscula.

XXI. Helminthoglypta, Ancey.

I venture to suggest the above name for the well-known Californian species of Helices such as arrosa, Gould; ramentosa, Gould; exarata, Pfeiffer; tudiculata, Binney, and others, as Dr. Jousseaume has proved they are distinct from the European type of Arionta (Helix arbustorum), by many features of the soft parts. He has studied Helix tudiculata, so that this species must be regarded as the type of the group. It bears the same relation to Aglaja and Lysinœ, as in Europe Arionta to Campylœa, and I am convinced the two series are parallel in both countries. Micrarionta, Ancey, a group including only three Californian species, viz: H. Gabbi; H. facta. and H. ruficincta, Newcomb, is very near Helminthoglypta, and connects it with Aglaja..

To be continued.

THE SHELL-BEARING MOLLUSCA OF RHODE ISLAND.

BY HORACE F. CARPENTER.

(NOTE. This article is a continuation of the same subject as formerly published in "Random Notes on Natural History."—EDITOR.)

Chapter XXXVI.

132. Planorbis (Menetus) exacutus, Say.

Synonyms: Planorbis, lens, Lea; Planorbis Brongniartiana, Lea; Planorbis lenticularis, Lea; Planorbis Buchanensis, Lea; Planorbis hyalina, Lea.

This very peculiar shell was discovered in Lake Champlain by Mr. Augustus Jessup. Only two specimens were found and these were deposited in the cabinet of the Academy of Natural Sciences, at Philadelphia. Mr. Say described them in 1821, in the "Journal of the Academy," Vol. II, No. 165, under the name of Planorbis exacuons. This term is not a Latin word, nor has it a Latin termination and it may be presumed that in printing the description, an "o" was substituted in mistake, for a "t." If so, by correcting this error, we have a legitimate specific name, and one very expressive of the form of the shell. The subgeneric name, Menetus, includes those species whose shells are depressed; whorls rapidly increasing; the periphery angulated, and the aperture very oblique. It was used by A. and H. Adams, in 1885, for two species of Planorbis inhabiting the United States, planorbis opercularis, Gould, and exacutus, Say.

The shell is of a light horn color, those from some localities almost white, with four whorls, flattened so that each whorl is twice as wide as deep; the upper and lower surfaces are both convex and meet at the periphery in an acute lateral edge; the superior termination of the lip exactly coincides with the sharp edge of the body whorl; the aperture, looked

at transversely, appears almost triangular; lip simple and sharp; umbilicus broad, showing all the volutions to the apex. Diameter, one-quarter of an inch.

It is found in brooks, ditches and stagnant ponds, adhering to sticks and leaves. It is quoted from New England to Kansas, and southward to Washington, D. C. The only locality where I have found it is in a small pool near Hammond's Pond, Pawtucket. Mr. E. H. Jenks has found several specimens in Valley Falls Pond.

133. Planorbis (Gyraulus) deflectus, Say.

Synonyms: Planorbis virens, Adams; Planorbis obliquus, DeKay; Nautilina deflecta, Chenu.

Shell dextral, depressed; whorls five, minutely and regularly wrinkled across; body-whorl somewhat carinated above; aperture suddenly deflected downwards; lip simple, commencing just below the carina and embracing but a small portion of the whorl; umbilicus broad, showing one-half of each whorl to the apex; upper surface of the shell convex; lower surface concave. Diameter, three-tenths of an inch.

The sub-genus, Gyraulus of Agassiz is represented in the United States by five species of which four inhabit Rhode Island. This section is characterized thus: "Shell discoidal; whorls few, rapidly enlarging; periphery sometimes carinated; last whorl some times deflected." Planorbis deflectus was first collected by Dr. Bigsby in the Northwest Territory, and described by Say in the second volume of "Long's Expedition to the source of St. Peter's River," page 261, 1824. The variety virens of Adams, now considered as a synonym of deflectus was first found by Mr. Shiverick at New Bedford, Mass., and described by Prof. C.B. Adams in Silliman's Journal vol. XXXIX, No. 274, 1840, as a distinct species. It resembles deflectus in all respects excepting that the lip is not so much deflected, in fact, no more so than in other species of this sub-genus.

P. deflectus is found in ponds and rivers, adhering to stones, Great Slave Lake to Washington and from New England to Nebraska. The typical deflectus is not common in Rhode Island, although we find a few in Valley Falls Pond. The variety virens, is quite abundant in this locality.

135. Planorbis (Gyraulus) dilatatus, Gould.

Shell small, of a yellowish green color; spire flat, composed of three whorls, separated by a well-defined suture; the outer whorl has a sharp margin on a level with the spire; below this margin the whorl rounds convexly so as to encircle a small, deep, abruptly-formed umbilicus; this whorl enlarges rapidly, forming a large, not very oblique aperture; lip expanded, trumpet shaped. Diameter of the shell, three-twentieths of an inch; thickness, one-twentieth of an inch.

A widely distributed shell but extremely local. It was first found on the Island of Nantucket, in damp moss by Mr. J. M. Earle of Worcester, Mass., afterwards in July, 1840, Mr. J. J. Whittemore found it in great numbers in a small pool in Hingham, Mass. Mr. Perkins has found it at New Haven, Conn. The only locality in Rhode Island so far as I know, is a little pond on the side of the Louisquissett Pike, about half way between Providence and Harris Lime Rock in Smithfield. It is only a shallow depression, nearly dry most of the year, and the shells were found in summer on stones and at first were mistaken for some species of land shell, but were identified as Planorbis dilatatus afterwards by my friend, Mr. John Ford, of Philadelphia. They were reddish in color and not greenish as above but the *color* of all our fluviatile shells depends on the locality and the nature of the water in which they live. Another species to be described hereafter, whose color is given by authorities as brownish horn or light chestnut, is fully as often found in our State as black as coal, while in some localities they are nearly white.

135. Planorbis (Gyraulis) hirsutus, Gould.

Synonyms: Planorbis albus, W. G. Binney, Haldeman, non Müller.

Shell light brown, concave on both sides, more so on the left, whorls *three*, rapidly increasing; aperture large, sub-oval, oblique; lip simple. Diameter one-quarter of an inch. The prominent characteristic which distinguishes this species from all others of the subgenus, is that expressed by its specific name, hirsutus. The entire surface of the shell is covered by a *dark* epidermis, bristling with rigid hairs which are arranged in close revolving lines. When the shell becomes bleached the hairs drop off and show plainly the revolving lines.

Mr. W. G. Binney has endeavored to show that our shell is identical with the Planorbis albus, Müller, of Europe, and in his description of American fresh-water shells in the "Smithsonian Miscellaneous Collection," No. 143, 1865, page 132, he has named it Planorbis albus, Müller. Notwithstanding Mr. Binney's great reputation as a Conchologist, and his valuable labors in this department, I cannot but think he is wrong in this instance. The two species, hirsutus and albus are as surely distinct as any two species of the same subgenus can be. The general form of the two is similar, but not more so than several other species. The color of the European species, albus, is, as its name signifies, white, or nearly so, and they have neither the rigid hairs, nor the revolving lines of our hirsutus. I have numerous specimens of both species, and my specimens of albus are not as smooth as deflectus or parvus. The number of whorls and the umbilicus are different, and the habits of the animal are unlike ours.

On referring to Reeve's "British Land and Fresh-water Mollusks," page 139, we find his description of Planorbis albus: "Shell rather depressed, thin, whitish, horny, covered with a scarcely perceptible hairy epidermis: lower, concavity, a broadly excavated umbilicus; whorls four to five. The animal feeds voraciously on species of Potamogeton and is found on water plants in all parts of the British Isles."

Planorbis hirsutus was first discovered by Prof. C. B. Adams, in Mansfield, Mass., and described by Dr. A. A. Gould, in 1840, in "Silliman's Journal," Vol. XXXVIII, page 196, and in 1841, in "Gould's Invertebrata of Massachusetts," page 206. It has been found at Dorchester, Dedham and Cambridge, adhering to sticks and stones in stagnant water, and in Rhode Island at Valley Falls and in the Providence and Worcester Canal, on stones, but has never been found in America, so far as I can learn, upon a water plant.

To be Continued.

Young Collectors' Corner.

HOW TO COLLECT SMALL LAND SHELLS.

BY V. STERKI, M. D., NEW PHILADELPHIA, O.

Continued.

II.

HOW TO TREAT THEM WHILE ON JOURNEYS.

Many American collectors recommend putting the smaller specimens in alcohol at once. This is very expedient but it does not prove quite satisfactory for several reasons. In many instances it is desirable to examine the living animal; its size, shape, color, and mode of locomotion. In the case of rare or new forms this is of great importance and would not be possible after immersion in alcohol, which has a tendency also to coagulate slime and so stiffen the odontophore (lingual membrane), as to render its examination difficult. By simply

drying the animal the odontophore may be more easily prepared and examined and the preparation will get cleaner. And last, but not least, the use of alcohol will result in the soft parts remaining in the aperture of the shell, and not only make it unsightly, but render the proper study of the specimens difficult or impossible. In the case of *Pupas* and *Vertigos*, this is very important, as the teeth and folds often reach deep in the mouth of the shell and should be seen plainly to be studied correctly. It may be prevented by keeping the shells living dry for a few days, so that the animals may lose a part of their moisture and retire deeper in the shell; then it is time to kill them, by dipping them in a strainer or piece of fine muslin in nearly boiling water for from 30 seconds to one minute. After this they should be dried well in a moderate heat to prevent decomposition of the soft parts, and the development of fungi. If the shells are collected at their homes it is best to place them, together with the moss and dead leaves, in a box. If this should be wooden, there will be air enough; if tin, the cover should be perforated with small holes, but they should not be kept too long in it. Shells also should never be kept in a stoppered vial before they are dry; use cotton instead of cork. The shells, as found, are often covered with slime and dirt, and it is necessary to clean them; but most of them are too small and too tender to do this by hand. A prominent collector has indicated a very expedient means: Some fine sand should be put in a small glass test tube with the shells, and after water is added, the tube should be gently shaken until the shells are clean. A box or bottle of washed sand should be always kept on hand and the portion used may be dried for future use. Cleaning in this way should be done while the animals are living; when thus treated the shells are less liable to get filled with sand. Sometimes it is advisable to soak them for a few hours in water in which a little soda has been dissolved.

After drying, the shells should be separated by species and put up in vials or tubes, not however without a label indicating the *place* where they were collected, and the name, if known. It should be constantly borne in mind that the locality is of more importance than the name, as the latter can be obtained at any time, while the former is more easily forgotten and if lost cannot be supplied. If the vial is not full of shells, a piece of cotton wool should be added to prevent damage. Shells of quite different sizes should be packed separately, lest the smaller ones slip into the larger and in many instances be lost. If specimens are sent for examination or determination, all kinds of about the same size, from one locality may be put together. I like this mode best, as it at once gives an idea of the malacological character of a certain place.

A collector should try to have as good specimens as he can find, but if a number of good ones cannot be obtained, poor shells are of course, preferable to none. While it should be remembered that the modes of collecting described in these pages will in most instances yield a number of any species living in a certain locality, on the other hand, it is not the right thing to select only the largest and most beautiful specimens for the collection, as they would not give a true idea of a species or variety, and the average form should be well represented. It is also a good plan to add a few young specimens, in different stages of growth, as the smaller species not only form very interesting groups, but also present very beautiful forms that should be looked for earnestly. There is no doubt but that quite a number of new species and varieties of the *Pupa* and *Vertigo* group have yet to be found in America. I am making a special study of these and shall always be glad to receive minutiæ for examination and, if desired, for determination, and shall, in describing new forms give full credit to any contributor.

STRIÆ.

Changes of P. O. addresses: M. A. Mitchell, from Waldo, Fla., to Jasper, Mo.; Rev. A. B. Kendig, from 35 Dale St., Boston, Mass., to 11 Hanson Place, Brooklyn, N. Y.; G. D. Harris, from Ithaca, N. Y., to Jamestown, N. Y.; Dr. S. Hart Wright, from Lake Helen, Fla., to Penn Yan, N. Y.

Reports of Natural History Society proceedings especially desired.

A. N. Prentis, Professor of Botany in Cornell University, has sailed for Europe, to carry on the advanced study of his specialty.

Corrections: In No. 11, page 67, right hand column, *15th* line from bottom read *mass* for moss. Same number, under New Localities, the word States in report of *Carychium exiguum*, should be *State*.

The Humboldt Natural History and Archæological Society was organized and incorporated April 16th last, at Eureka, Cala., with the following board of directors and officers: T. B. Brown, President; T. F. Cornan, Secretary; Prof. E. H. Whipple, R. B. Powell, Robert Gunthur.—West American Scientist (May).

A SUGGESTION TO OUR YOUNG FRIENDS.

BY ADAM LOOFBET.

Every student, especially the young beginner, should have an aquarium. This need not be an expensive affair. A large glass jar such as is used by confectioners is very well suited to this purpose. Any deep dish or wide-mouth bottle will answer, but glass is much preferable as it enables observations to be taken on all sides, as with many of our Mollusca, the foot is the most striking characteristic of the animal. To prepare your aquarium, cover the bottom about an inch deep with clean sand and gravel and fill with clear water. If for fresh-water specimens, get your supply from a brook or pond, as it contains minute particles upon which the animal feeds. Allow about fifteen shells of average size to each quart of water. Keep your aquarium in a shady place but not in a close room. It will probably not be necessary to change the water as any impurities will be devoured as rapidly as formed.

PUBLICATIONS RECEIVED.

On Some Marine Invertebrata, dredged or otherwise collected by Dr. G. M. Dawson *in* 1885, on the coast of British Columbia; with a Supplementary List of a few Land and Fresh-water Shells, Fishes, Birds, etc., from the same region, by J. F. Whiteaves, F. G. S.—From the Transactions of the Royal Society of Canada, Vol. IV, Sec. 4, 1886."

This valuable contribution to Science by Prof. J. F. Whiteaves, who has worked so nobly in the British North American field, comes none too soon, and adds materially to our knowledge of the Natural History of British Columbia.

Annual Report of the Trustees and List of Members of The American Museum of Natural History, New York City, for the year 1886-7.

Received from A. Woodward, Librarian, to whom we are indebted for many valued favors.

We thankfully acknowledge the receipt of the following publications: The Canadian Entomologist, Port Hope, Canada.—The West American Scientist, San Diego, Cala.—The Microscopical Bulletin and Science News, Philadelphia.—The Open Court, Chicago, Ill.—Common Sense, Mexico, N. Y.—The Exchangers' Monthly, Jersey City, N. J.—The Eclipse, Pittsburgh, Pa.—The Young Geologist, Oskaloosa, Ia.—The Blade, Mendota, Ills.—The Shelbyville Star, Shelbyville, Ill.—National Educator, Allentown, Pa.—The Enterprise, Towson, Md.

TOO LATE FOR CLASSIFICATION.

OFFERED:—Fine specimens of Helix Traski, Newc. in exchange for any North American Helices not in my collection. G. W. MICHAEL, Jr., Morro, S. L., Obispo, Co. Cala.

NEW LOCALITIES.

Editor Conchologists' Exchange:

Sir: I wish to report *Zonites intertextus*, Binney, as being found sparingly in this (Hancock) County, and *Pleurocera neglectum*, Anthony, from the Tippecanoe River, Koscinsco County; both in Indiana. Both localities, I believe, to be new.

GEORGE W. PUTERBAUGH,
March 26, 1887. Greenfield, Ind.

Editor Conchologists' Exchange:

Sir: A new locality for *Unio papyracea*, Gould, is Lake Ashby, Volusia Co., Florida, This paper-like shell is very rare, and only a few specimens were secured. The original station, I think, Mr. Gould does not give.

S. HART WRIGHT,
June 7, 1887. Penn Yan, N. Y.

NECROLOGY

Thomas Moore, English botanist, died January 1, 1887.

Dr. Martin Websky, German scientist, died Nov. 27, 1886, aged 62 years.

C. E. Broome, English mycologist, at Bath, England, November 15, 1886.

William Willoughby Cole, Earl of Enniskillen, noted for his splendid collection of fossil fishes, died Nov. 12, 1886.

June 4th in London, England, Henry Whitall, Professor of Astronomy at Belvidere Seminary, N. J., at the age of 75.

Rev. Roswell Dwight Hitchcock, D. D., L. L. D., President of the Union Theological Seminary, died June 16, 1887, of peritonitis, aged 70 years.

Rev. Mark Hopkins, D. D., L.L. D., Ex-President of Williams College, died suddenly at Williamstown, Mass., June 17, 1887. He was born at Stockbridge, Mass., February, 4, 1802.

Current Comment.

FROM OUR FRIENDS TESTIFYING TO THE VALUE OF "THE CONCHOLOGISTS' EXCHANGE."

"Cannot afford to miss a single number."

* * Now that your paper is assuming such proportions, not only in size but in the articles published, I cannot afford to miss a single number, nor a single item. John Walton, Rochester, N. Y.

"Much interested."

* * I do not wish to lose a copy, for I am much interested in the Paper. E. J. Smith,
Natick, Mass.

"Solid and valuable."

* * Allow me to congratulate you on the present number of "The Conchologists' Exchange." It is a solid, valuable number. Chas. T. Simpson,
May 4, 1887. Ogalalla, Neb.

"Very valuable."

I acknowledge receipt of Nos. 5 and 6 of a very valuable publication styled "The Conchologists' Exchange," the perusal of which has proved so interesting to me that I should like to possess all the numbers from the beginning, and to become a regular subscriber for the future. Henry Vendryes, Kingston, Jamaica.

"Worth the money."

Enclosed please find my subscription for "The Conchologists' Exchange." I think it worth the money.
J. W. Velie, M. D.,
Academy of Sciences, Chicago, Ill.

"It will prove of much benefit to conchologists."

I am much pleased with the appearance of your paper and I think it will prove of much benefit to conchologists. George W. Michael, Jr., Morro, Cal,

"Quite efficacious."

Your "Conchologists' Exchange" is proving quite efficacious. I have already made several exchanges and have received many letters from persons all over the United States, asking for shells. I would not be surprised if you had struck on a plan that would eventually be of much benefit to conchologists.
Wm. A. Marsh, Aledo, Ills.

"An admirable publication."

I return you my thanks for the specimen copies of "The Conchologists' Exchange" which is an admirable publication. J. Matthew Jones,
Halifax, Nova Scotia.

"Promises to become a valuable publication."

Allow me to thank you for your kindness in sending to me the first numbers of "The Conchologists' Exchange." It promises to become a valuable publication for persons interested in the Mollusca.

Charles Prosser, Instructor,
Ithaca, N. Y. Cornell University.

"A perpetual surprise."

The little exchange notice you inserted for me has been the means of adding *several hundred species* to my cabinet. "The Conchologists' Exchange" is a perpetual surprise. I could not get along without it. I aim to put the sample copies you send where they will do good. George W. Puterbaugh, Greenfield, Ind.

"Convenient."

I like your convenient "Conchologists' Exchange" very much. Enclosed please find subscription commencing with Vol. I. Wm. Sutton,
San Francisco, Cal.

"Wants an enlargement."

The collectors will soon demand an enlargement of your convenient publication. H. A. Pilsbry,
Sept. 23, 1886. Davenport Acad. of Sciences, Iowa.

[They have it.—Ed. May, 1887.]

"We have needed just such a paper."

I have just returned home and found your bright little "Exchange" awaiting me. We have needed just such a paper J. A. Singley, Giddings, Tex.

[The above are a few extracts from several score of similar letters, showing the esteem in which we are held. We wish to increase our subscription list very largely and would thank our subscribers to see that all their friends subscribe as well, and would again invite their attention to our premium list upon another page.—Ed.]

OUR PREMIUM LIST.

A CHANCE FOR WORKERS KEEN AND BRIGHT.

Send $1.75 and the names of 5 subscribers, and we will forward to the originator of the club, one copy of Dr. Hays' "Descriptions of the Inferior Maxillary Bones of Mastodons," 29 plates; or, in lieu thereof, 50 cents' worth of shells at List prices.

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SPECIAL NOTICE.

We will esteem it a favor if all those who are raising Clubs at the former price of 35 cents, will send us their addresses. The Premium List and the prices there mentioned will be held open until Sept. 15, 1887, so that those who intend to subscribe may find it to their advantage to form Clubs of five or more, as single subscriptions to Volume II. will not be taken at less than the new rate of 50 cents.

CORRESPONDENCE.

Editor Conchologists' Exchange:

Sir: In Tryon's Manual, First Series, Vol. III, page 109, Mr. Tryon states that *Melongena fusiformis*, Blainv. is apparently very closely related to *Cuma Kiosquiformis*, Ducl., but that the operculum according to D'Orbigny is not purpuroid. He says that the resemblance conchologically is much nearer *Cuma* than either *Melongena* or *Siphonalia* and that he cannot help thinking that the great French naturalist was mistaken as to the operculum. I recently received three specimens of this shell from Panama, two of which contained the dried animal and the operculum in position. It is not purpuroid, but, like that of *Melongena coronis*, is solid and claw-like, with an apical nucleus, and might be mistaken for that of the above shell only that it is smaller and a little heavier. I think this will settle it, that *Melongena fusiformis* is a proper *Melongena*. In my specimens I can trace some of the characters of the genus, a somewhat pyriform body-whorl, tuberculate shoulder, and there are resemblances in the aperture.

CHAS. T. SIMPSON.

May 4, 1887. Ogalalla, Neb.

Exchange Column.

Terms to NON-SUBSCRIBERS, which must be cash with order, are as follows: Exchanges of 20 words, including address, 10 cents; for each additional 10 words the charge will be 5 cents. No exchange will be inserted for less than 10 cents.

Each subscriber to Volume II, will have the privilege of inserting three (3) *free* exchanges of twenty-five (25) words each, *including address*. This rule is made to include those who have already subscribed in good faith at the old rate, 35 cents, or those who have received "New Subscription" blanks and are engaged in soliciting subscriptions at the former price.

WANTED:—American correspondents interested in the study of the genus Pupa (including Pupilla, Vertigo, etc.), of the U. S. Duplicates and other shells for exchange. V. STERKI, M. D., New Philadelphia, O.

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OFFERED:—American Journal of Conchology, seven vols. neatly bound, in exchange for shells.

A large *fresh* lot of Uniones, nasutus, complanatus and luteolus: also, a few Melantho decisa, all in excellent condition, to exchange for other fresh-water shells of the South and West. JOHN WALTON, 77 Arcade, Rochester, N. Y.

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TERTIARY and other fossils from Southern States and Europe; 50 species of Birds' Eggs, and 100 pounds of Minerals consisting of Amethyst on Agate; Agate rough and polished: Pyromorphite: Native Copper Zinc blende: Galena: rare Iron Ores, &c., &c., for strictly fine and correctly named Mollusca from South and Central America, Asia, Africa, and Australia.

WANTED:—First 3 vol. Lea's Obs. Genus; Unio. Say's American Conchology: Gould's Invertebrata of Mass: Kiener's plates of Shells: Carpenter's works: Tryon's Monog. Terr, Moll. of U. S., Sowerby's Conch. Manual and Plates for offers in works on Conchology.

Address, W. D. AVERELL,
Chestnut Hill, Phila.

OFFERS requested in exchange for many of the smaller mollusks of the waters south of Hatteras. W. H. RUSH, M.D., 1308 Green St., Philadelphia, Pa.

The Conchologists' Exchange.

VOL. II. CHESTNUT HILL, PHILADELPHIA, PA., JULY, 1887. No. 1

A Publication Designed for Conchologists and Scientists generally.

ISSUED MONTHLY

BY

WM. D. AVERELL,

EDITOR AND PUBLISHER.

☞ Correspondence upon Conchology, as well as reliable items of interest concerning the Mollusca, their habits, localities, etc., kindly solicited from all.

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SUBSCRIPTIONS TO VOLUME II ARE NOW DUE. FOR EXPIRATION OF SUBSCRIPTION SEE DATE ON WRAPPER.

AS it is our intention to improve "The Conchologists' Exchange" by every means in our power, we present the first number of Volume II in the confident hope that it will meet with the approval of all its readers. In addition to the highly instructive articles by Mr. C. F. Ancey, Mr. H. F. Carpenter and Mr. Wm. A. Marsh, (who, by the way, is seriously thinking of writing a history of the Mollusca of the entire state of Illinois after the completion of his present article); we print in this issue an enthusiastic letter from Professor W. H. Dall and a needed rebuke from the pen of Mr. Chas. H. Simpson, to that class of conchologists who unrighteously believe in receiving exchanges with the intention of never repaying them. Our "Young Collectors' Corner" has been enriched by an original article from the pen of Mr. John Ford upon "The Helices of Fairmount Park, Philadelphia; and the author promises to supplement this, in the next number, by describing other genera found there. Mr George W. Michael, Jr., also contributes some useful hints upon collecting Chitons. Some of our readers may think that the handsome "Premium List" published in another column is too liberal to be true. If those who think so, will please send us the names desired and the subscription price, we will speedily convince them that these offers are *bona fide* in every sense.

CONCHOLOGY is far more popular abroad than it is in America. Why is this so? Simply because of the lack of a cheap medium for the instruction of students. "The Conchologists' Exchange" supplies a long felt want in this field and you and your friends should encourage it.

THE duties of conchologists are three-fold. 1st: They should actively study the subject, have a collection and improve it. 2nd: They should support "The Conchologists' Exchange," their own paper; and recommend it to others. 3rd: They should enroll their names in a recognized scientists' directory and thus place themselves in communication with the rest of the world.

A FEW kindly, encouraging words to the young naturalist will do him a world of good. A curt refusal, a hasty, unwise criticism of his work may drive him to pursuits which will ruin his soul and cause you years of regret.

THE SHELL-BEARING MOLLUSCA OF RHODE ISLAND.

BY HORACE F. CARPENTER.

Chapter XXXVII.

136. Planorbis (Gyraulus) parvus, Say.

Synonyms: Helix parvus, Eaton, 1826,; Planorbis concavus, Anthony.

Shell small, discoidal, color from yellowish horn and greenish to black, both sides concave and equally exhibiting the volutions; whorls four; aperture rounded; lip rounded and sharp, bluish white within. Diameter one-fifth of an inch, thickness one-fifteenth. It is also found fossilized in the Post-pleiocene of the Ottawa Valley. It is quoted as being found abundantly everywhere, but is seems to be quite local in Rhode Island, the only locality where it is found abundantly being Cunliff's Pond, at Elmville, about three miles south of Providence.

Before leaving the genus, I wish to call attention to a new shell found by me fifteen years ago in a small pool near Hammond's pond, in Pawtucket. It is a *Planorbis*, but differs from any species heretofore described in any work on American Conchology. Only one specimen exists at present, and that one is in my collection, and has been examined by several conchologists who pronounce it very curious and never seen before by them. If other specimens are discovered in the future and described as new, I wish to announce that it was first described by me at a meeting of the "Providence Franklin Society" Tuesday evening, February 27, 1871, and the printed description appeared in the "Central Falls Visitor," the Friday following. The new species was dedicated to my friend, Mr. E. Henry Jenks, of Valley Falls, with whom I have had the pleasure of exploring little Rhody's woods and streams for many years.

137. Planorbis Jenksii, H. F. Carpenter.

Shell small, of a transparent horn color, minutely wrinkled by the lines of growth; whorls three, separated by a well defined suture; carinated on both sides and having a miniature resemblance to *P. bicarinatus;* spire nearly flat: apex sunken a trifle; under side forming a broad, shallow umbilicus; aperture constricted, the length from top to bottom being twice the distance as that from side to side; lip thickened and slightly reflected, white within.

This is the smallest *Planorbis* yet discovered in the United States. Its size in fractional parts of an inch is as follows: Longest diameter, 8-100; shorter diameter, 7-100; diameter of aperture, 4-100 by 2-100.

GENUS SEGMENTINA.

Fleming, 1830.

Synonyms. Segmentaria, Swainson, 1840; Discus, Haldeman, 1840.

The species of Segmentina inhabit Europe, Asia and Australia. The two species inhabiting the United States belong to the sub-genus Planorbula, Hald.; they are Segmentina, (Planorbula), Wheatleyi, a southern species, and

138. Segmentina (Planorbula), armigera, Say.

Shell varied in color from light horn to black, in some localities nearly white; spire regular, slightly concave, showing four volutions; under side deeply concave, the whorls carinated and bearing several raised revolving lines; aperture oblique, inclining to the left; lip in light colored specimens dark brown or black at the edge (our Rhode Island specimens are generally black as coal all over); within the aperture are five teeth, two on the pillar lip, one near the anterior lip, one on the side of the labium, and two on the upper portion of the outer lip. Diameter one-fourth of an inch, thickness one-tenth. This is a very simple and plain-looking shell externally, but its remarkable characteristic is the armature of

the mouth. The teeth which nearly close the aperture are situated far within and need a hand microscope to distinguish them, but by breaking off a portion of the lip they may be examined with ease. They are found abundantly in stagnant ponds, ditches, &c., wherever there is decaying vegetable matter. I have often picked from a dozen to twenty on a single oak leaf and sometimes thirty to forty from a stone as large as my fist. Inhabits New England, Middle and Western States.

SUB-FAMILY ANCYLINÆ.

This sub-family contains three genera, Ancylus, Latia and Gundlachia. Latia inhabits New Zealand. Gundlachia has five species, two of which inhabit the United States; one is found in California, and one in the District of Columbia. Ancylus has about fifty species, twenty of which inhabit the United States, and two make their homes in Rhode Island.

139. Ancylus fuscus, Adams.

Shell small, thin and pellucid when the epidermis is removed, oval, the entire outline regularly curved; apex elevated a little and turned to the right and rear of the centre. It is distinguished from all other species of Ancylus by its epidermis, which is brown, rough and course, projecting beyond the margin of the shell and extended in a plane with the object to which it may be attached, and thus appears to turn upward like the brim of an old slouch hat. Its length is 3-10, breadth 1-8, height 1-20 of an inch. Within it is polished and shining.

It was discovered by Mr. Kinne Prescott in a small rivulet in Andover, adhering to stones, and was described by Prof. Adams in the "Boston, Journ. Natural History," III, 329, 1840, in the same year in Silliman's Journal, XXXVIII, p. 396. Prof. Adams afterward found it at Mansfield, Mass. Dr. A. A. Gould, also found it at Fresh Pond, Cambridge, and it is quite common in R. I., in ponds and rivers, adhering to stones and to the empty valves of fresh-water clams.

140. Ancylus paralellus, Hald.

Synonym; Ancylus rivularis, Gould, non. Say.

In October, 1817, Say published a description of Ancylus rivularis Owing to the meagreness of the description, and perhaps having never seen Say's type, Dr. Gould in the Invertebrata of Mass., 1841, applied Say's name to our New England species. In the Second Edition, edited by Mr. Wm. G. Binney, this error is rectified, and the proper name of paralellus, substituted. The Ancylus rivularis of Say is not found in New England. Ancylus paralellus is not very common in R. I. A few may be obtained in the Blackstone and in the Ten Mile River on stones near the shore in several places. It is a small, narrow, elongated-oval shell, thin and delicate, of a greenish tint; apex nearly central, leaning a little to the right and rear; sides nearly parallel, both ends rounded; length, 1-4; breadth, 1-10 inch.

Suborder Thalassophila contains three families, Amphibolidæ (spiral and operculate) Siphonariidæ and Gadiniidæ, (conical and not operculate) no representatives of which are found in the U. S.

CLASS 4, SCAPHOPODA.

Shell a hollow cylinder open at both ends. A simple straight or curved tube without spire. Animal carnivorous, burrowing in sand or mud in salt water. This Class contains one family, Dentalidæ, several genera and about one hundred species. They are called tooth shells and the type is the Dentalium elephantinum, Linn. The only species inhabiting the eastern coast of the U. S. are the D. dentale and D. striolatum, both New England species but only found north of Cape Cod.

With this chapter I close the description of all the univalve shells of R. I. Four of the five Classes of Mollusca have been treated of in these pages and the remaining one, Pelecypoda, will be the subject of the succeeding chapters on the "Shell Bearing Mollusca of Rhode Island."

To be continued.

BRIEF NOTES ON THE LAND AND FRESH-WATER SHELLS OF MERCER CO., ILL.

BY WILLIAM A. MARSH.

(Continued.)

40.—Unio tuberculatus, Barnes.

This species is found rather sparingly in the river and sloughs and very rarely in Pope, Edwards, and Henderson Creeks. It is very constant in its specific characters and is so unlike any other shell found here, that when once known it cannot be mistaken for any other. It is almost always covered with tubercles. The nacre is usually white, but occasionally one is found having a salmon colored nacre. In Southern waters it is found with pink and chocolate interior. It is sometimes beautifully rayed. In the river it is generally found in the gravel, while in the sloughs it is deeply imbedded in the mud or sand. In our creeks it is likely to be found in the iron ore beds, where it seems to be sluggish in its movements and is rarely found in motion.

41.—Unio trigonus, Lea.

A solid, heavy, dark brown species, found rather abundantly in the river and adjacent sloughs. When young it has beautiful green rays and a rather smooth epidermis, and then resembles *solidus* somewhat. It varies much in its nacre, some being white, others a rose color, while others still are pink or salmon. The animal of *trigonus* is generally red, but I have often found it white. It is one of our finest species and as found here is nearer Mr. Lea's types than any specimens I have ever seen from any other locality. It is a very much inflated shell with massive, incurved beaks, very angular over the umbones, with very prominent growth lines. It is an active species and may be found in both deep and shallow water, and does not seem to be critical about locality, occupying muddy locations as well as sandy or gravelly situations.

42.—Unio tenuissimus, Lea.

This fragile but very interesting species is found rather sparingly in the Mississippi. It seems to occur in both shallow and deep water, often burying itself completely in the sand and gravel beds. It avoids very muddy bottoms and is never found in the sloughs or lakes. This species is smooth and wide and is usually beautifully rayed. The young specimens are crenulated posteriorly which portion of the shell is as thin as paper. It need not be confounded with any other shell except *U. gracilis*, oblique forms of which sometimes resemble *tenuissimus*.

43.—Unio undulatus, Barnes.

This common species is found very abundantly in all our small streams, but never in the river. It has a very wide geographical distribution, ranging from Western New York to Texas. It is a thick, heavy, solid species usually covered with from five to seven undulating folds or plications, and for this very fact it is the most common species in our creeks; as the coons, musk-rats and hogs cannot as easily break its thick shell as they can the more fragile species. Many of our more fragile Unios which were very abundant in our small streams thirty years ago, are now extinct, having been exterminated by the animals before mentioned, and the time is not far distant when nothing will be left but this robust shell. Ten or twelve years ago the collector who was not very critical about his specimens, had but to find the log where Mr. Coon took his meals on fresh-water clams, or the hole where the musk-rats went out of the water into the creek-bank, to find many specimens of almost every species to be found in the stream. Many collectors consider *undulatus* and *plicatus* identical, but this is not likely to be the case, as I have this shell from all the Northern States, from New York to Iowa and from the states of Missouri, Tennessee, Alabama, Arkansas and Texas, and its seems to maintain its integrity with very little variation throughout. I have specimens from Ohio and Indiana which approach very closely to *U. multiplicatus* but not to *plicatus*. The females of this species are much more in

flated than the males. The two Southern forms, *U. latecostatus* and *U. Elliotti* seem to be closely allied but as the true *undulatus* is found associated with them they are probably distinct. I have never found *undulatus* associated with *plicatus*.

44.—Unio ventricosus, Barnes.

This species is very common in the Mississippi River, and it is one of our most showy and handsome Unios, the green rayed varieties especially so. In respect to its rays and the color of its interior it is extremely variable; the nacre of some being bluish white, in others it is a beautiful pink varying to pale rose color, while in others still it is pale salmon. This shell is often found without rays and it is then difficult to separate from *capax*. It seems to be a very active species and is found in both deep and shallow water, in the muddy bottoms of the sloughs and lakes as well as in the sand and gravel beds of the river. It attains an immense size and becomes very tumid with age. The females are very much more inflated posteriorly than the males.

45.—Unio zig-zag, Lea.

This beautiful little shell is rather common in the river and sloughs. As before stated it is the female of *U. donaciformis*. Mr. Lea's types of *donaciformis* came from Tennessee. I have it from the Cumberland River and it agrees with the male form found here. This little shell is usually covered with beautiful green zig-zag rays. The female is very much inflated, very truncate, and has very angular umbones. It is usually bluish white within, but is found sometimes with a pink nacre. It is very active and is often found in considerable numbers in the course gravel and under flat rocks near the margin of the river at times of low water.

Sub-Genus Margaritana, Schumacker.

46.—Margaritana complanata, Barnes.

Shell slightly plicate and triangular in outline, symphynote, and very much alated dorsally. It is a very abundant species and is found commonly in all our streams and sloughs. It attains an immense size in the river, being found there six inches in length including its wing and from six to seven inches wide. It is a very much depressed shell with very small beaks and flattened umbones. Its interior is usually white. The young specimens are very beautifully rayed and have a greenish brown epidermis and very prominent growth lines. Animal very active.

47.—Margaritana rugosa, Barnes.

Shell rugosely plicate. It is found rather sparingly here, and in the creeks only, and attains an immense size. I have specimens from Pope Creek seven inches wide and four inches long. It has a dark brown epidermis, which in the young specimens is greenish, with beautiful green rays. Nacre usually white but often found of a salmon color. The teeth of the adult shell are very large, often trifid. It is very constant in its specific characters and has a very wide geographical distribution. Animal slow in its movements.

To be Continued.

A CATALOGUE OF THE BULIMINI FOUND IN CENTRAL ASIA.

BY C. F. ANCEY, BERROUAGHIA, ALGERIA.

The principal character of the molluscous fauna of Central Asia, viz: Turkestan, Afghanistan, and Beluchistan, is the numerous species of Bulimini found there. A monograph of these has been published recently by myself in the "Bulletins de la Societe Malacologique de France," 1886. The following have been recorded in this monograph, a number being new to science. Thibet is not included here.

1. Group of B. candelaris.

B. candelaris, Pfeiffer. Solıman Range.

2. Group of cœnopictus, Hutt.

*B.———? Quettah. Afghanistan.

3. Group of B. intumescens, Mart.

B. secalinus, v. Martens. Wjernoje, Kulsdcha.

B. intumescens, v. Mart. Samarkhand.

B. intumescens, v. Fedtschenkoi, Ancey, Samarkhand.

B. Haberhaueri, Dohrn. Mts. Hasrat Sultan, Ferghana.

B. pullaster, v. Mart. (Ancey.) Valley of of the Batikty.

4. Group of retrodens, v. Mart.

B. retrodens, v. Martens. Kulsdcha.

*B. retrodens, v. Mart. var minor. Kulsdcha.

B. aptychus, Ancey. Wjernoje.

B. aptychus, var.——? Capusiana, Anc. Wjernoje.

B. leucoptychus, Mts. (Ancey). Riv. Fekkes and Naryn-kol.

B. entodon, Mart. Wjernoje, near the Ala-tau range.

5. Group of dissimilis.

B. dissimilis, Martens. Arassan-bulak.

6. Group of Sogdianus.

B. Sogdianus, v. Mart. Samarkhand.

*B. Sogdianus, v. persicus. Parr. Schiraz, South-eastern Persia.

B, Oxianus Mart, Khiwa, Khorassan, Ghilan (?).

B. Bonvallotianus, Ancey. Khokand, Samarkhand.

From the latter locality I have just received this shell under the erroneous name of Sogdianus, var. major. It is quite distinct in color, texture, peristome, number of whorls, broadly reflected peristome. I have a variety, major, and a variety, gracilis, of this shell, and all preserve their characters with great uniformity.

B. Potaninianus, Anc. Turkestan.

B. Kuldschanus, Mouss, Kuldscha.

* B. coniculus, Mart. Kuldscha.

B. Sindicus, Bens, Afghanistan.

* B. miser, Mart.—Mounts Altai, Semipalatinsk, etc.

* B. Martensianus, Anc. (segregatus, v. minor, Mart, non Bens.) Mountains near Taschkent and Schachimardan.

* B. eremita, Bens.—Afghanistan, Samarkhand.

I have received from the neighborhood of Samarkhand some very fine shells I cannot refrain from uniting with this species, still they differ in colour having a shining surface,nearly uniform somewhat bluish-gray colour faintly variegated on the upper whorls, with corneous apex and pale chestnut aperture becoming lighter towards the peristome. The above form should be named var. hepatica, Anc., long, 18½-20; diam. 8-8½; length of aperture, 6-6½ mill.) Whorls, 7-7⅓. A very fine variety of the same form also occurred, being of a more oval shape and larger, (long, 24; diam. 10; length of aperture, 8; breadth of aperture, 5½ mill.) It might be called var. procera on account of its large size. The colour is the same as in the preceding one. It has 7½ whorls.—Samarkhand.

*B. Khokandensis, Anc. (eremita var., Mart.). Khokand.

B. Kuschakewitzi, Anc. Southern Turkestan. Khokand.

B. Kuschakewitzi, var candisata, Anc.Southern Turkestan.

B. Ufjalvyanus, Anc.—Turkestan.

B. albiplicatus. Anc.—Taschkent, Schachi.

B. Przevalski, Anc. Taschkent, Ferghand.

B. Herzensteini, Anc. Turkestan.

B. Herzensteini, var pellucens, Anc.—Turkestan.

B. labiellus, v. Mart—Mounts Tarbagatai.

B. labiellus, var. minor, Anc., Eastern Turkestan.

*B. Asiaticus, Mouss., Kuldscha.

B. Asiaticus, var? cylindrocouns, Anc.,Kuldscha.

B. Asiaticus, var? Regeliana, Anc. Kuldscha.

*B. Asiaticus, var? Vamberyi, Anc. Kuldscha.

B. subobscurus, Anc.—Daraty—bulak.

B. Griffithi, Benson.—Afghanistan.

GENUS MASTUS.

M. chlon, Pfr. Soliman Range.
*M. polygyratus, Pfr.—Bender—Abbas.
M. pullus, Gray.—Afghanistan.

The above has been referred by me to Gen. Runina; altogether I think now Mastus is sufficiently distinct from the former in being always smaller and never truncate.

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*The species marked with an asterisk are not represented in my collection and I should be much obliged to anybody who should be able to send them to me for examination or exchange as well as any new species from that country.

In the lot I have alluded to. were specimens of a Helix, new for Samarkhand and Central Asia, viz. H. Dschulfensis, Dubois, and also Patula ruderata var., angulosa, Mouss. (The latter is perhaps, the same as Patula ruderata var, opulens. Westerlund, which is itself very close to the Japanese P. pauper, Gould.)

Young Collectors' Corner.

HELICES IN FAIRMOUNT PARK. PHILADELPHIA.

BY JOHN FORD, PHILADELPHIA, PA.

As some account of the Helices in Fairmount Park may prove interesting to your younger readers, I take the liberty of sending this article. There are about ten prominent species inside of the Park limits. These are as follows:—*H. albolabris, H. alternata, H. arborea, H. bucculenta, H. concava, H. hirsuta, H. ligera, H. minuta, H. tridentata and H. suffusus.* Four at least of this number are strictly localized; viz.. *H. albolabris, H. concava, H. minuta and H. suffusus.*

The others may be found at various points in the Park; their distribution depending chiefly upon the character of the vegetation. Some species affect the bushy hillsides, some the woods, and others the open meadows and damp places, but in almost every case they prefer the under sides of logs and stones except at feeding times when they may be seen browsing upon the leaves of adjacent shrubbery. So far, I have found *H. albolabris* in but one place which is at the angle formed by the Richmond branch of the Philadelphia and Reading Railroad, and the north-west corner of Laurel Hill near the end of the bridge.

Unfortunately there are not many to be seen at the present time as the blasting for the new River Road destroyed most of the Ailanthus bushes upon which they chiefly fed. Only a short time before the rocks were removed I took over 200 specimens from a space less than 50 feet square. A number of these were captured upon the Ailanthus bushes in the act of eating the foul-smelling leaves, a fact which seems to prove that no plant is too offensive to be used as food by some animal. Very many of these specimens were in perfect condition; as may be learned from the sample in the Philadelphia collection on the second floor of the Academy of Natural Sciences. The writer was the probable discoverer of this colony, which is is safe to say has never been equalled in thit region either in number or in perfection of form and color.

Nearly opposite to this locality, on the west side of the Schuylkill just south of the bridge crossing the old carriage road, very many *H. ligera* and *H. alternata* may be found. Here the conditions are much the same as were those already described; large stones being scattered about and many Ailanthus bushes growing between. But strange to say not a single specimen (so far as I know), of *H. albolabris*, has ever been seen in the vicinity; and what is quite as singular, no representatives of the species so plentiful here, have been found with the *H. albolabris* just over the river.

On the eastern embankment of the Philadelphia and Reading Railroad, about 200 yards below Belmont Landing, the remains of an old spring house may be seen with the water still bubbling up among its ruins, across which rests the trunk of a fast decaying tulip poplar. Here among the stones and scoria deposited by the railroad company, flourish large numbers of *H. ligera*, *H. alternata*, *H. bucculenta* and *H. hirsuta* with occasionally a lone specimen of *H. suffusus*. By digging a few inches into the scoria immediately south of the western end of the ruins, the careful hunter may also find some good *H. concava*, a species which is, doubtless, quite rare in the Park; this being the only place in which the writer has found it. On the north side of the ruins, just under the leaves, I secured one day last November, more than a score of the finest *H. bucculenta* that I have seen anywhere.

It should be remembered, however, that the beauty and perfection of this and of most other species depend as much upon certain phases of the weather, as upon the prevalence of suitable food. A dry season not only retards the growth of the animal but often causes an erosion of the shell which makes it unfit for cabinet purposes. Nevertheless some good specimens may be collected here at any time between April and October.

Still further south, along the embankment, a few specimens of *H. tridentata* may be secured by searching under the old rail-road ties scattered about. At this point also, a few *H. arborea* may be obtained, though these have always been more plentiful among the old logs fronting Landsdowne Mansion. Here, in December, 1885, I found a colony literally encased in the ice which filled a small crevice in a log; and I was not a little surprised after melting them out, to find the tiny fellows as lively as though they had experienced no unusual hardship. As already stated several of the species referred to, occur in various other parts of the Park, especially upon the hill-sides bordering the Wissahickon Creek and about the wooded flats between the stream and carriage way just east of Ridge Avenue. They are, however, far less abundant than in the localities specially mentioned.

H. minuta, the only species that remains to be noticed, is probably, in this region the rarest of them all. I have never found it here except at a point near the Connecting Railroad, one-third of a mile above Columbia avenue. About 50 specimens were secured on that occasion, all taken from the bottom of an old "tie" which laid in a wet, grassy meadow. The shell, as its name implies, is very small, but its recurved bell-like lip, and pearly lustre make it an object easily observed. Two days later I visited the locality again but the "tie" as well its fellows had been changed to ashes and smoke.

ON COLLECTING AND PRESERVING CHITONS.

BY GEO. W. MICHAEL, JR., MORRO, CALA.

IN the May number of the "Conchologists' Exchange" I note Prof. Keep's directions for preserving Chitons. I have had much experience with Chitons, and find it is awkward while collecting to carry along boards and candle wicking and tie down every specimen as you find it, for if you collect two specimens at a time, one will curl up while you are tying the other. I carry along a can with a tight lid. I use a gallon milk can. As fast as I find the Chitons I drop them into the can which I keep filled with sea water. If they curl up they soon open and attach themselves to the can and will remain there until you reach home or camp, when you can remove them at your leisure and tie them down to boards. For this I use narrow strips of cotton rag, which I find better than candle wicking. On my last trip I had 50 or 60 Chitons in the can, and nearly every one was in fine condition on the following morning, after being driven over ten miles of rough roads.

VALVES.

One of the associate editors of "Conchologia Castrica," is dead in the person of the venerable Dr. Ezra Michener.

We should be pleased to correspond with any collector having original information respecting "Pearls," their growth, size and modes of collection.

The Conchological Museum of the Academy of Natural Sciences contains 45,184 trays and written tablets and 165,858 specimens. (Report of the Conchological Section for 1886.)

We know of nothing more beautiful to the eye and instructive to the mind than a cabinet of shells. They should be carefully selected, neatly arranged and proudly shown to all comers.

Proffessor R. P. Whitfield contributes two valuable articles to the "Bulletin of the Museum of Natural History," of interest to conchologists, viz: "Description of Lymnæa (Bulimnæa) megasoma, Say, with an account of changes produced in the offspring by unfavorable conditions of life; and "Notice of a new Cephalapod from the Niagara rocks of Indiana."

Upon a recent visit to Dr. W. H. Rush, of Philadelphia, we were much interested in some water-colors of shells in his collection. We have good reason to conclude from the abundant information at the Doctor's command that a work upon the Mollusca of the Atlantic coast of the United States would be very acceptable to science, and the Doctor is welcome to the suggestion.

Dr. W. H. Rush, of Philadelphia, kindly informs us that *Voluta Gouldiana* was found in from 150 to 200 fathoms, 7 miles South-by-East of Fowey Rock Light, Florida. But three specimens were found. One of these is in the cabinet of the National Museum, at Washington, one in the Museum of Comparative Zoology, Cambridge, Mass., and one in Dr. Rush's collection, where we had the pleasure of seeing it upon a recent inspection of the Doctor's fine cabinet.

"The Collectors' Association of Mt. Pulaski, Illinois," which was organized June 19, 1887, is intended for collectors in all branches of Natural History, Philately and Numismatics, living in Mt. Pulaski and vicinity. The following officers were elected at the first meeting: O. H. Phinney, President. M. F. Laushbaugh, Vice-President; O. L. Rankin, Secretary; V. P. Pumpelly, Librarian; T. R. Laushbaugh, Treasurer. We wish the Association all the success imaginable and trust they will soon be able to possess a library and collection of their own. Societies for the intelligent study of Science should be universally encouraged and we hope the example of "The Collectors' Association" will be extensively followed.

CORRESPONDENCE.

SMITHSONIAN INSTITUTION,
Washington, D. C., June 29, 1887.

Editor Conchologists' Exchange:

Sir: Enclosed please find subscription to your little paper, for which I hope all prosperity and progress.

I may add as an item of news not without some interest, that the rare *Mitra Fergusoni* of Sowerby, described and quoted as from "Panama" (where it was probably purchased), has been found upon the Swan Islands, between Cuba and Honduras, in the Caribbean Sea, by a recent collector of the National Museum. *Conimitra*, Conrad, described as a fossil, is found living in the Antilles at considerable depths. The coloration of the new species recalls that of *Meta cedonulli*. *Mesorhytis* is another form from the same region until lately only known in a fossil state, while the discovery of *Amusium Mortoni* in the Gulf of Mexico, living, by the Fish Commission, is another fact of the same sort. A pretty little *Mitra*, about 3-8 of an inch long and sub-cylindrical, with beautiful wavy, close transverse lirations, and a claret brown tint when fresh, has been named *Mitra Rushii*, in honor of Dr. W. H. Rush, of Philadelphia.

A fine new *Voluta* (Gouldiana, n. s.), from the same region reaches two or three inches in length, is covered with fine revolving lines, resembles *V. Junonia* in shape but is more slender; resembles *V. dubia* in the crenulated shoulder of the early whorls and belongs to the same section (*Aurinia*), but differs from all other Volutes of the group in having the colors of plum and fawn, distributed in broad, revolving bands of great elegance. It has two plaits upon the column and no operculum. The riches of the Antillean deeps are hardly touched yet! Yours sincerely,

W. H. DALL.

BLACKLIST THEM.

ED. CONCHOLOGISTS' EXCHANGE: *Sir:*— Blacklist whom? Why a lot of conchological frauds who get honest collectors by fair promises and tempting offers, to send them shells and then perhaps never even acknowledge their receipt,to say nothing of making any return. It is not any particular grievance that causes me to write this,but a number. I have to-day,perhaps, 1000 species due from those who have made the fairest promises, not a shell of which I ever expect to receive, and my experience is that of many others. I believe in calling things by their right names, and I say that any one who induces a conchologist to send shells, and then deliberately makes no return, whatever, is no better than a thief. Persons so inclined have a great advantage, as the innocent sender is generally far away and cannot inflict personal chastisement,and the law will hardly take hold of such a case. This swindling business is on the increase. Five years ago I hardly knew a dishonest exchanger; to-day I can count these shell frauds by the dozen. There is a bitter feeling growing against these thieves among the honest and reliable, and already from a number of my better exchanges I have received lists of the black sheep, with warnings against him,and a request to send the list along the line. This is our only protection. Whenever any one is found out beyond a doubt to be a fraud,publish him far and near and stop his disreputable business. Of course there may be cases when an honest person is unavoidably delayed in making a return exchange, but I think that in such cases an explanation can generally be given. Any one who has time to correspond with you, to reply every time by return mail until he gets your shells, who can make out a tempting exchange list and select what he wants from yours,can certainly get time to drop a card and acknowledge your sending, and if it is impossible to make a prompt return then let him say so honorably and give the reason why.

SOME of my correspondents who have been taken in do not like to say anything about it for fear that these swindlers will retaliate on them. There need be no fear on this score. A person who swindles one will swindle all and can have but little influence. A person who deals honorably in his exchanges can always refer to his correspondents when writing to a stranger.

Do not be in a hurry to denounce any one as a fraud. Give a correspondent plenty of time. give him the benefit of every doubt. And if after repeated dunnings you can get no reply, pass his name around, and warn your fellow exchanges to beware of him and ask him to pass it around. It is time such stealing was stopped and that these rascals were set aside by themselves; apart from those who are prompt and honest, where they can swindle each other to their hearts content.

Somewhat Indignantly Yours,

CHAS. T. SIMPSON,
June 17, 1887. Ogalalla, Nebraska.

PUBLICATIONS RECEIVED.

Bulletin of the American Museum of Natural History, New York City, for May, 1887; also, Index to Vol. I. 1881 to 1886; from A. Woodward, Esq., Librarian of the Museum.

Seventeenth Annual Report of the Entomological Society of Ontario; from Rev. C. J. S. Bethune, Editor Canadian Entomologist, Pt. Hope, Ontario.

The Agassiz Companion: from Wm. H. Plank, Wyandotte, Kansas.

Our August number will contain two valuable contributions from Mr. C. F. Ancey, and one very instructive article from the pen of Dr. Wm. H. Rush, of Philadelphia, describing his dredging operations upon the Atlantic and Gulf Coasts.

STRIÆ.

Dr. Edward Schnitzer, otherwise known as Emin Pasha, who is now in the interior of Africa, is an enthusiastic lover of Natural History and much is expected of him should the Stanley expedition for his relief result favorably. While at the University of Breslau, he became the intimate friend of Dr. R. Long, and of the late Rudolph von Uechritz, whose death we announced in a former issue. His intimacy with these savants led him to become an explorer and accounts for his present journey to Central Africa.

NECROLOGY

Dr. Didrik Ferdinand Didrichsen died March 19th, in his 72nd year.

The death at Calcutta, is reported of Abbe Ben. Scortechim, a young Italian mycologist and explorer.

Mrs. Lucy W. Say, widow, of the eminent naturalist, died Nov. 15, 1887, at the advanced age of eighty-six years.

Mr. John Gibson, of the Natural History Department of the Edinburgh Museum of Science and Art, is deceased. He was the author of "Science Gleanings" and other works.

Dr. Ezra Michener, of New Garden Township, died June 24th, 1887, in his 93d year. He studied medicine in his youth, Dr. David J. Davis being his preceptor and in 1818 graduated from the University of Pennsylvania. During his long practice of sixty years he found time to study Natural History and made extensive collections in Zoology, most of which he gave to Swarthmore College, but we regret to say they were entirely destroyed in the late fire. With Dr. Wm. D. Hartman as a companion he prepared the Natural History Department of Judge Futhey's History of Chester County. He aided the late Dr. William Darlington in the compilation of "Flora Cæstrica," published in 1853; while every conchologist should know of "Conchologia Cæstrica," edited conjointly by him and Dr. Hartman. He had a world-wide reputation and was spoken of in the highest terms by Professor Agassiz, the elder. Dr. Michener was a member of The Academy of Natural Sciences, of Philadelphia and of numerous other scientific institutions, all of which will miss a friend and earnest worker.

Exchange Column.

Terms to NON-SUBSCRIBERS, which must be cash with order, are as follows: Exchanges of 20 words, including address, 10 cents; for each additional 10 words the charge will be 5 cents. No exchange will be inserted for less than 10 cents.

Each subscriber to Volume II, will have the privilege of inserting three (3) *free* exchanges of twenty-five (25) words each, *including address*. This rule is made to include those who have already subscribed in good faith at the old rate, 35 cents, or those who have received "New Subscription" blanks and are engaged n soliciting subscriptions at the former price.

A large *fresh* lot of Uniones, nasutus, complanatus and luteolus: also, a few Melantho decisa, all in excellent condition, to exchange for other fresh-water shells of the South and West. JOHN WALTON, 77 Arcade, Rochester, N. Y.

WANTED—In perfect condition, with localities:—CYPRÆA aurantium, nivosa, exusta, Scotti, thersites, tessellata, physis, eglantina, fusco-dentata and umbilicata. MUREX, Sauliæ, palma-rosæ and tenuispina. OLIVA, angulata, maura, Melchersi, porphyria, tenebrosa, tremulina. STROMBUS guttatus, latissimus and melanostomus. VOLUTA, fulgetra, junonia, imperialis, magnifica, reticulata, Rossiniana and rare Asiatic, Australian, African and South American Bulimi, Helicidæ and Unionidæ.

OFFERED.—50 species of Tertiary and other Fossils from Southern States and Europe, Woodward's Manual of the Mollusca 75 edition: Leidy's Memoir of the Extinct Sloth Tribe, N. A.; Lea's Syn. of Family of Naiades, '52 edtn: Hays' Descrip. Inf. Max'y Bones of Mastodon's, 10 plates: Agassiz & Gould's Comp. Physiology: Bohn's edt'n: Coultas, Prin. Botany, Cryptogamia: Lea's on a Fossil Saurian of the New ed Sandstone Formt'n; Lesquereux's Cretacceus Flora, 50 plates, Smith'n Mis. Col. Vol. 4, Neuroptera, Vol. 6 Diptera and Coleoptera, 3 pp out, uncut, or any of the shells on my Price Lists which I may have in duplicate. Parties not having any of the shells wanted above, need not apply. W. D. AVERELL, Chestnut Hill, Phila.

Offered.—Fine specimens marine and land shells for perfect echinoderms. Land and fresh-water shells from the South and Southwest for reptiles in alcohol, D.W.FERGUSON, 138 Wilson Street, Brooklyn, N.Y.

Offered.—Unio Leibii, Lea, and 75 other species of N. Amer. land and fresh-water shells. Collectors please send lists and receive mine. JEROME TROMBLY, Petersburgh, Mich.

Wanted.—American correspondents interested in the study of the genus Pupa (including Pupilla, Vertigo, etc.), of the U. S. Duplicates and other shells for exchange. V. STERKI, M. D., New Philadelphia, O.

Offered.—Nassa vibex; Oliva literata, reticularis; Columbella mercatoria; Cypræa caput-serpentis, erosa, helova, lynx, moneta; Nerita tessellata, peloronta; Fissurella Barbadensis; Donax variabilis; Dosina discus; Cardium magnum. Wanted.—Shells and works on Conchology, JOHN B WHEELER, East Templeton, Mass.

Cyclas dentata, Terebra dislocata, Sigaretus perspectivus, Sphærium securis and striatinum, Zonites suppressa, Helix fallax and many others to exchange for Land and Fresh-water shells. A K. FAIRCHILD, Whippany, N J.

Offered: — 15 species Unios including Aberti, purpuratus, Schoolcraftii, and subrostratus, 5 species Anodonta. Fossil Oyster Shells. Satisfaction guaranteed. Send list. FRANK J FORD, Wichita, Kans.

Marine Algæ, Shells, Sea Curiosities, (all correctly named), for Algæ, Shells, or Bird's Eggs. All letters answered, S R. MORSE, Atlantic City, N. J.

Wanted:—Correspondence on Natural and Mental Science. For Exchange—"Livingstone's Travels" and other good works for books. J. B. NICHOLS, Cazenovia, N. Y.

L. S. Fossils for a good Phacops Trilobite, Steele's Geology, Minerals or Ind. Relics of Slate or Copper. W. H. BEAN, Lebanon, O.

150—1st. class side-blown Birds' Eggs to exchange for Coins, Stamps, fine specimens of Indian Arrow-heads and Minerals.—WILLIS P. ARNOLD, Shannock, R. I

Offered: — Ensatella Americana, Petricola pholadiformis, Angulus tener, Say; Macoma fragilis, Ad.; Tottenia gemma, Tot., Modiola plicatula, Urosalpinx cinerea, Say; Rissoa minuta, Purpura lapillus, Nassa trivittata, Lunatia heros, Melampus bidentatus, Unio nasutus, U. complanatus, Sphærium rhomboideum, Say; S. partumerium, Succinea Totteniana, Lea; S. ovalis, Gould; Littorina, Odostomia, &c., for other shells. EDWARD W. ROPER, Revere, Mass

Wanted:—To exchange Minerals, Birds' Eggs in sets, land and fresh-water Shells for the same. E. M. GOODWIN, Hartland, Vt.

Fine Fossils and Shells for Ind. Relics and Fossils; also Stamps and Coins for the same. JAS. W. JONES, Pt. Townsend, Wash. Terr.

Ripidolite, Kyanite, Jasper, Albite, etc., all large specimens for Shells, Fossils or Minerals. No small specimens accepted. H. I. CARD, Lock Box 54, Willimantic, Ct.

I will exchange fine Minerals for Fossils, Eggs, Minerals, Ind. Relics, etc. WM. C. BANK, Cove Mills, Stamford, Ct.

Offers requested in exchange for many of the smaller mollusks of the waters south of Hatteras. W. H. RUSH, M.D., 1308 Green St., Philadelphia, Pa.

OUR PREMIUM LIST.

A CHANCE FOR WORKERS KEEN AND BRIGHT.

Send $1.75 and the names of 5 subscribers, and we will forward to the originator of the club, $1.00's worth of shells at List prices.

Prof. J. E, Kingsley's "Naturalists' Assistant," 228 pages, will be sent post-paid for $5.25 and the names of 15 subscribers.

Woodward's "Manual of the Mollusca," 1880 edition, will be sent free for $10.50 and the names of 30 subscribers.

Tryon's "Structural and Systematic Conchology," cheap edition, will be sent free for $17.50, and the names of 50 subscribers.

Tryon's "Monograph of the Tercestrial Mollusca of the United States," plain edition, will be sent free for $35 and the names of 100 subscribers.

Sowerby's "Genera of Recent and Fossil Shells," 264 plates, ½-morocco, 2 volumes, 8vo. sent free for $52.50 and the names of 150 subscribers.

AND LOOK

☞ For $87.50 and the names of 250 subscribers, we will send, express prepaid, one of

Queen's Educational Microscopes.

mounted upon a brass tripod stand, with adjustable eyepieces, object glasses and diaphragm complete. A fine chance for an active worker.

PREMIUMS IN SHELLS.

To every person sending us before December 1, 1887, the names and cash subscriptions (at the Club-Rate of 35 cents per annum), of 100 persons (new subscribers), a choice collection of shells consisting of 150 species and 500 specimens.

To every person sending 50 names with the accompanying cash a collection of 75 species and 250 specimens.

To every person sending 25 names and the cash, will be sent a collection of 40 species and 125 specimens.

These offers consist of choice shells in fine condition with correct name and locality in each instance; and will furnish numerous duplicates for exchange. A few of the genera from which the above will be selected are as follows: Nautilus, Murex, Neptunea. Pyrula, Cassidulus, Pleuratoma, Triton, Ranella, Nassa, Purpura, Cuma, Harpa, Oliva, Tasciolaria, Dittorina, Goniobasis, Paludina, Ampullaria, Crepidula, Nerita, Neritina, Turbo, Trochus, Haliotis, Chiton, Helix, Bulimus, Achatina, Achatinella, Clausilia, Planorbis, Lymnæa, Cyclostoma, Pyshia, Pholas, Mactra, Tellina, Donax, Venus, Cytherea, Tapes, Cardium, Unio; Anodonta, Modiola, Arca, Pecten and others.

These offers are made simply to increase the popular interest in that beautiful and highly interesting study—Conchology; as well as to extend the subscription list of "The Conchologists' Exchange," a monthly publication to which every shell-collector should subscribe.

Special Notice.

We have made 35 cents the price for Clubs of 5 or more subscribers, and in no case will individual subscriptions be received at less than the new rate of 50 cents. By request the above Lists will be held open until December 1, 1887, so that those who intend to subscribe will find it to their advantage to form Clubs of five or more and thus secure the benefit of the reduction. In addition to these splendid Premiums every subscriber to Volume II has a premium in the shape of three (3) free exchanges annually.

Parties desiring to secure the benefits of the above truly liberal offers, must not keep the names of subscribers together with the subscriptions, until they have completed their list, but should send them soon as received and we will keep an exact account of them.

A COMMISSION of 30 per cent in CASH will be paid in lieu of the above premiums.

WANTED—ODD NUMBERS AND COMPLETE VOLUMES OF "Random Notes on Natural History," containing Mr. H. F. Carpenter's article on "The Shell-bearing Mollusca of Rhode Island," for which good prices will be paid. The Concho Ex, Chest. Hill, Phila.

Price-List of Shells

received since the issue of Conchologists' Exchange No. 9 and 10.

Terms cash with order. Express charges to be borne by purchaser in all cases. Discount of 5 per cent. on orders for $5.00 and over.

ARCA.

Noæ, L. 20,25
fusca, Brug 20

BUCCINUM.

*undatum, Lam. . . . .20 to 30

BULIMUS.

spirifer, Gabb, ... 15,20
pupa, L. 5
Bergeri, Roth, ... 10
syriacus, Ehr. 10

CYCLOSTOMA.

dentatum, Say 5
lactaria, Gould 5
sulcatum, Mull 5

CLAUSILIA.

virgata, Jan 3
piceata, Zgl 3,5
itala, G. v. Mart . . . 5
" " " var. . . 5
Grohmani, Phil. . . . 5
Sebourghiæ, Paul. . . 5
ventricosus, Drap. . . 3,5
bolensis, DeBetta . . . 3
solida, Drap. 3
Lampedusa, Calcora . . 5
agrigentina, Bourgt . . 3
lineolata, Hild. 3,5
affinis, Phil. 3,5
candidilabris, Zglr. . . 5
Stenzii, Zglr. 3,5
calabrica, Mouss . . . 5
fusca, DeBetta, . . . 5
plicatula, Drap. var. . . 5
exoptata, Schm. 3
Vindobonensis, Zglr. . . 5
dubii, Drap, var. obsoleta, Schm. 5
Adamii, Clessin, ... 5,10
Recubariensis, DeBetta, . 5
Strobeli, Porro 5
lenoensis, Villa. 5
orthostoma, Mke. 5
Styriaca, A. Schmidt. . . 5

CHONDROPOMA.

*Shuttleworthii, Pfr. . . 20

CHITON.

granulatus, Gmel. . . . 20,25

FASCIOLARIA.

*tulipa, L. 30.75

FISSURELLA.

Barbadensis, Gmel. . . 10

HELICINA.

*Sagraiana, D'Orb . . 25

HELIX.

guanensis, Poey 30, 40
planospira, Lam. v. Illyrica 15
cisalpina, Stab. v. Adami, ... 10
Sicana, Fer... 10
ammonis, A.Schmidt, . 5
" muralis, Mull., v. . 5
" " v. cris. . 5
frigidissima, Adami, (2600 m. ab. sea). 20
colubrina, Lam., v. Medoacensis, ... 15,20
" " v. nubila, . . 15,20
æmula, Rossm. 5
tarentina, Pfr. v. picta. . 3,5
bathyomphala, Charp... 5
meridionalis, Parr . . 3,5
destituta, Charp, ... 5
Hermesiana, Pini, . . 10,15
meda, Porro 3.5
lenticula, Fer. 3
Baldensis, Villa. . . . 5,10
carthusianella Drap. v. arvensis, Pini. 3
turrita, Phil, ... 3,5
rupestris, Drap., v. Pini, Adami, ... 3
obvia, Hartm. 5,10
apennina, Porro, . . . 5, 10
setifiensis, Bourgt, ... 10,15
strigata, Mull 5,10
apiculus, Rossm. . . . 3
conoidea, Drap. . . . 3
apicina, Lam. var. . . 3
variabilis, Drap. var. . . 5
cingulata, Stud. 10,15
" " v. incerta, Adami, ... 10, 15
cingulata, Stud. v. adhesina, Paul . . . 10, 15

HYALINA.

deducta, Peal 3, 5

MEGALAMASTOMA.

mani, Poey 20,25

PURPURA.

*tincta (Key West) . . 10,15
*patula, L. 35

TROCHATELLA.

*regina, Morelet 25,30
*regina, Morelet, var. (1) 30
*regina, Morelet, var. (2) 30

TURBINELLA.

muricatum, Lam., . . . 30,40
nassa, D'Orb. 15,25

TELLINA.

radiata, L. 10,20

TURBO.

*pica, L. 25,60

South American.

BULINUS.

Wagneri, Pfr . . . . 25 to 30
Ziebmani, Pfr . . . . 25 " 30
zoographicus, D'Orb . 20 " 40
phlogerus, D'Orb . . . 30 " 40
ovatus, Mull $1 00
oblongus, Mull, . . . 25 to 75
oblongus, Mull, sm. var. 40

HELIX.

polodonta, D'Orb . . 10
lactea, Mull (introduced) 10

HELICINA.

variabilis, Guild . . . 5

AMPULLARIA.

*scalaris, D'Orb . . . 30 to 50

CERITHIUM.

caudatum, Sby . . . 10

LITTORINA.

fusca, Pfr. 5

*operculated

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PHILADELPHIA, PA., U. S. A.

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BY

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IN a recent letter from our friend, Professor Josiah Keep, of California, he expressed the hope that some competent person would write a history of "East Coast Shells" as a companion volume to "West Coast Shells," just issued by him. It is to be hoped that, should such a work be designed, it will be edited for the express purpose of instructing beginners in the study of the Conchology of the Atlantic Coast of the United States; for therein, coupled with the evident design of the author to make himself clearly understood, lies the charm in Professor Keep's useful little work. To complete the trio, why may we not have Gulf Coast Shells? Who would have honor thrust upon him? To earn the lasting gratitude of the rising generation is meat and drink indeed.

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WE have received several complaints about the non-receipt of back numbers. In every case these have been promptly sent, and if there is any fault to be found, it is with the mails.

WELCOME to the Constitutional Centennial, September 15th, 16th and 17th.

THE SHELL-BEARING MOLLUSCA OF RHODE ISLAND.

BY HORACE F. CARPENTER.

Chapter XXXVIII.

Class Pelecypoda or Acephala.

Synonyms: Conchifera, Lamarck; Lamellibranchiata, Blainville; Bivalves, common name.

Acephala means headless, and the animals of this class have no head, and are the lowest in the scale of being. There is no sexual union between the animals of this class, fertilization being accomplished by the surrounding water, containing the male element. They breathe by means of gills only, and are therefore inhabitants of water, mostly marine, though there are a few genera which live in fresh water. The organs of the animal are enclosed in a membraneous sac, called the mantle, one fold of which covers each side, and is in turn protected by a shelly valve. In many species the mantle is prolonged into a tube called the siphon. It may seem strange to be told that our clam has no head, but that which is popularly called the head, is in fact, the siphons of the animal united in one tube, which projects two inches or more beyond the shell. At the extreme end are two orifices, one of which serves to convey the currents of water (caused by the agitation of the fringed cilia at this point), to the gills, where it is filtered, and the particles contained in it carried to the stomach; the other siphon serving to expel the purified water. It is said that if clams are placed in a basin of sea water containing indigo, they will, in a short time, render it perfectly clear, by collecting the minute particles of the impurity and condensing them into a solid form; and not only indigo, but whatever particles may be contained in the water, organic or inorganic, animal, vegetable or mineral, are thus removed, and the water purified. The thousands who visit our shores every summer to partake of the luscious clambake of Rhode Island, may not be aware that they are filling up on the sewage of the city, but as no one was ever known to be injured by eating any amount of them, concentrated and refined sewage, obtained in this way, must be healthy. The orders and sub-orders of the class, Pelecypoda are named from the peculiarities of the animal, and the families, genera and species, from the form of the shell, &c.

The shells of this class have two valves, thus distinguishing them from all those heretofore described in these papers. These valves are equal sided as well as equivalve, thus distinguishing them from the Brachiopoda, which are inequivalve although equal sided. The valves in Brachiopoda are termed upper and lower, but in Pelecypoda they are called right and left, the animal living and moving in an upright position, resting on the thin edges of the valves. These edges are called the ventral edges, and the opposite ones the dorsal edges. The two valves are united at their dorsal edges by a ligament, and articulated by a hinge, generally furnished with interlocking teeth. The valves open spontaneously by the action of this elastic ligament, and are closed at the will of the animal, by the powerful adductor muscles which pass through the animal from side to side, and are inserted upon the middle or side of each valve, leaving a scar or impression upon the shell. As I said before, bivalves live and move in an upright position. There are exceptions to every rule, and this statement is not correct as applied to all bivalves. Oysters, scallops and some others, live on one side, and the lower valve in these cases, is deeper and more capacious than the upper.

A specimen of a common Unio, or fresh-water clam, will serve to illustrate the meaning of the terms used in descriptions of bivalve shells. The apex is the point from which the growth of the valves commences, and is called the beak or umbo; these are near the hinge, that part of the shell growing least rapidly. As the animal plows along through the sand or mud, with the shell standing erect, and the sharp edges of the valves down, and the shorter portion of the shell nearest the apex forwards, the valve which corresponds to your right side is the right valve, and the opposite the left. The whole of the upper length of the shell is called the dorsal margin, and the opposite length the ventral margin or base. The beaks are

turned toward the shorter end of the shell, which is called the anterior end, and the opposite the posterior end. The ligament which holds the valves together is situated on the dorsal margin, on the posterior side of the umbones. The dorsal margin is also called the hinge line. The teeth just beneath the umbones are called the cardinal teeth, and the ones on either side, lateral teeth. Some bivalves have no teeth, and the valves are held together only by the ligament, and by the muscles of the animal. The length of bivalves is measured from the anterior to the posterior ends; the breadth from the dorsal to the ventral margin; and the thickness from the centres of the closed valves.

Class Pelecypoda consists of two orders; Siphonida and Asiphonida; five sub-orders; forty-seven families, and twenty-seven subfamilies.

ORDER SIPHONIDA.

Animal with siphons, and mantle margin more or less closed. This order is divided into two sub-orders;—Sinupalliata and Integripalliata.

SUB-ORDER SINUPALLIATA.

Animal with long siphons, partially or wholly retractile; the pallial impression upon the inside of the valves having a sinus. This suborder has fifteen families.

Family Gastrochænidæ, (Tubicolidæ of Lamarck), is divided into three sub-families, five genera, ten sub-genera, and about forty species living, and as many more fossil. They are all burrowers in mud or stone, but do not inhabit the Atlantic coast of the United States.

Family Teredidæ has five genera and about forty species. These animals burrow in wood, floating logs, harbor piles, hulls of vessels, &c. They inhabit Norway, England, Pacific Ocean, &c. I have never seen a specimen of any species in Rhode Island, although I have heard of specimens of Teredo being taken in New Bedford, Mass., from whale ships that had been cruising for years.

Family Pholadidæ is divided into two subfamilies; Pholadinæ with nine genera and their sub-genera, and Jouannetinæ, with five genera, &c. The animals of this family are all borers, and their shells are found imbedded in all kinds of material, such as Limestone, Chalk, Shale, Peat and Clay.

SUB-FAMILY PHOLADINÆ.

Valves with an anterior gap, always open in adult shells.

GENUS, PHOLAS, LINNÆUS, 1757.

There are only four species of this genus, three of which belong to the sub-genus Cyrtopleura, Tryon, 1862.

141.—Pholas costata, L.

Shell large, thin inflated, oblong-ovate, white, covered with radiating toothed ribs. Length, six inches; breadth and heighth, each two inches. This shell is very common in the West Indies and on the Atlantic Coast of the Southern States. It is sold in the markets of Havana, and is highly esteemed as an article of food. The animal is phosphorescent and when alive shines in the dark. It is said that after eating this dainty, the lips of the eater appear to be on fire. Until 1845 a living specimen of this species had never been found within one thousand miles of New England, but Professor Adams had discovered a bed of dead shells of all sizes, at New Bedford, Mass., with indications that the living Pholads had inhabited these shores at no very distant period. In 1845 Mr. Thomas A. Greene found several living specimens in the mud, brought up by the dredging machine, at the end of Long Wharf, in New Bedford. He thought they must have burrowed two or three feet in the mud. Since that time no other living specimens have been discovered in New England, but as the ocean shore of Rhode Island has not yet been thoroughly examined, the above facts would lead me to believe that there is a possibility of its yet being found here.

142.—Pholas (*Cyrtopleura*), *truncata*, Say.

Shell, chalky-white, oblong; beaks at the anterior third; anterior portion of the shell, triangular, pointed; posterior broadly truncated.

Length, three inches; heighth, one-and-a-half, and breadth, one-and-a-quarter inches.

This species like the preceding, is of Southern distribution, was found by Say, in South Carolina, and described in the Journal Academy of Natural Sciences, Philadelphia, in 1822. A few specimens were taken at the same time and place, with P. costata, at New Bedford, by Mr. Greene. Perkins says "it is not rare at New Haven, where it is found in peat bogs, and in clay, at high water mark." It was first found in Rhode Island, in mud, brought up by the dredger, in deepening the channel of Providence River. There is a large bed of them in clay, near Field's Point, two miles south of Providence, and they are common at Bristol, and probably in many other places in Narragansett Bay.

To be Continued.

BRIEF NOTES ON THE LAND AND FRESH-WATER SHELLS OF MERCER CO., ILL.

BY WILLIAM A. MARSH.

(Continued.)

48.—Margaritana confragosa, Say.

Shell plicate; quadrate in outline. The epidermis of this species varies from dark green to dark brown. This is our most beautiful *Margaritana*, and being everywhere rather rare, it is our most desirable shell for exchange. It is very much plicated and much inflated, with incurved beaks having a deep furrow over their summits, and highly ornamented with a row of sharp tubercles on each side. The dark brown varieties are ornamented with a dark band running around the shell with the growth lines. This species has a white nacre, and is provided with heavy, solid teeth. It is a very constant species with the exception of the color of its epidermis, and cannot be easily confounded with any other. It is found only in our river sloughs having a muddy bottom, where the water is still. Up to seven years ago, I had found but two or three of this species, but, for some unknown reason, in the very localities where formerly I looked for it in vain, I now find it more frequently. At times it appears to be very active, while at other times it must be sought after, buried in the deep, soft mud.

49.—Margaritana deltoidea, Lea.

This small species was formerly abundant in our creeks, but is now nearly extinct. It is a smooth, triangular shell with a yellowish brown epidermis, and has the growth lines prominent and close. It has dull green rays, often interrupted by its numerous lines of growth. Some specimens are much inflated, while others are quite flat. The undulations on its beaks are coarse, but few in number. Cardinal teeth, double in both valves.

50.—Margaritana marginata, Say.

This remarkably fine shell is very rare here. I have found but a few specimens in Edwards and Pope Creeks, and but one specimen in the river. This was taken near the mouth of the Iowa River, where it empties into the Mississippi at New Boston, and might have come from the former stream. This shell is plicate posteriorly, oblong in outline, and has very prominent undulations on its beaks, nearly straight and parallel with its hinge line. This species is covered with beautiful green rays over the entire shell, interspersed with dots of green, yellow and sometimes, black. Epidermis, yellowish brown. Nacre, white.

Sub-Genus Anodonta, Brugiere.

51.—Anodonta edentula, Say.

Shell smooth, oval, with or without rays; rather solid, and extremely variable. This fine species is found rather abundantly in this locality. As it occurs here it is so extremely variable that it is almost impossible to describe it. There are at least three quite distinct varieties found here. One variety, which rarely occurs in Edwards Creek, very many collectors would scarcely regard as even a variety of *edentula*. When adult, it is quadrate in outline, very much rounded at the extremities of the shell; inflated; umbonial slope rounded; growth lines very close, striate or sulcate. Epidermis dark olive, often having green bands running parallel with growth lines. Rudimentary teeth very slight. Nacre salmon color

or white. Beaks not prominent, with very slight undulations; and having the calcareous and ferruginous deposits covering the entire margin of the shell. A second variety also occurs in our creeks, differing quite materially from the variety just described. It is oblong-oval in outline; solid; beaks prominent with much heavier undulations. Epidermis varying from dark olive to light brown. In the left valve of this variety there is a short, but well defined, cardinal tooth with a notch in it fitting into the deep cleft in the primary tooth of the right valve. In fact, many individuals of this variety, owing to the teeth, *might be mistaken for specimens of Margaritana.* This variety varies much in respect to its rays; many being rayless, others covered with beautiful rays, sometimes capillary. It is, when adult, quite angular over the umbones. The third variety is found in the river only, and in some respects resembles *Anodonta ferruginea*, Lea, from Indiana. It is a thick and solid variety, with a dark brown epidermis. The nacre is either rose color or a light salmon, with a dark pink border around the margin of the shell. Beaks prominent, incurved, with undulations large and coarse. Rays dull, often obsolete. Animal often red, sometimes salmon color. This species is usually found where the current is quite strong, on sandy or gravelly bottoms.

52.—Anodonta imbecilis, Say.

This fine species has a geographical distribution from New York to Texas, and throughout this wide range varies but little. It is a smooth shell, oval in outline, cylindrical, slightly inflated, and very thin, yet it keeps well in the cabinet. It usually has a brilliant green epidermis, often marked with concentric green bands, sometimes with alternating bands of a darker shade of green or dark olive color. Beaks very minute, scarcely visible and covered with very minute undulations. Nacre shining and bluish white; when young a vast number of very narrow, faint rays are often observable. This shell is found here only in the sloughs of the river, in the small lakes of the *Bay Island, always where there is a soft, muddy bottom, and is very abundant. There is one mystery about this shell that I have never been able to solve, and that is that of the many thousands that I have seen and collected I never found one fully grown. What becomes of them I do not know. I have received very fine adult specimens from many of my correspondents from different localities, but all my efforts to obtain an adult specimen from Mercer County, have been in vain. This species is very prolific, producing its young in incredible numbers, of which fully one-half die from some unknown cause when not over one-fourth grown.

53.—Anodonta grandis, Say.

Shell smooth, oval and inflated. Beaks rounded, very prominent and slightly incurved. Undulations on beaks quite large, zig-zag in shape and varying from six to eight on each valve. Epidermis varying from dark brown to light olive, and often found with greenish streaks running transversely. The nacre varies from dull salmon through light pink to dull white. Cicatrices large and plainly observable when not covered with mineral deposits. *Grandis* is the type of a number of very interesting although very closely allied species, the most prominent of which are *plana*, *decora*, *ovata*, and *corpulenta*. Typical forms of these species are easily separated when once well known, but intermediate forms are so extremely puzzling that no conchologist can separate them to a certainty. *A. grandis* is found rather common from Ohio to Texas, and varies wonderfully in different localities. It is reported very common in many portions of Illinois, but it is a singular fact that not over half a dozen specimens have been found in Mercer County. Our specimens are far from typical and are close to *corpulenta*. It is found here only in the river sloughs associated with *corpulenta* aad *imbecilis*. It differs from *corpulenta* in being smaller, less inflated, and in having the beaks more rounded and heavier. The color of the shell over the summit is always of a lighter shade, and it never has the copper colored nacre of *corpulenta*. Adult forms of *grandis* are much more solid with very much more prominent growth lines than *corpulenta*.

To be Continued.

*This island has been incorrectly styled "Bog Island" in former descriptions.—EDITOR.

ON THE GENERIC NAME OF A REMARKABLE BIVALVE SHELL FOUND IN THE CONGO.

BY C. F. ANCEY.

In the "Bulletins de la Societé Malacologique de France" for 1886, Dr. A. Trémeau de Rochebrune proposed the generic name of Chelidonura for the curious species of Iridinidæ described by Dr. Ed. von Martens, under the name of Iridina (Mutela) hirundo, from specimens collected by Mr. Mechow in the Quango, a stream tributary to the Congo. Subsequently, a second species was found in the last named river and described by Dr. de Rochebrune, who then proposed for these shells, which are certainly different from any genus of Iridinidæ, the said name of Chelidonura. Unfortunately Chelidonura has already been used by M. Adams for a shell of the family Bullidæ, and Chelidonura, Rochebrune (non Adams), must therefore be changed to Chelidonopsis, Ancey.

The genus Burtonia, Bourg. (1883) proposed for different species of Lake Tanganyika, Central Africa, is certainly nearer to Chelidonopsis than any other section in Iridinidæ, but they want the dorsal carina and the very curious appendage of the posterior edge of the valves. The true Mutela are quite different in shape.

The analogy of several species inhabiting the countries and streams of West Africa and Lake Tanganyika, is not to be wondered at, for the latter belongs to the basin of the Atlantic and *not* of the Indian Ocean, and being (during part of the year), connected with some of the headwaters of the Congo.

Berrouaghia, Algeria, June 11, 1887.

DESCRIPTION OF NEW GENERA OR SUB-GENERA OF HELICIDÆ.

BY C. F. ANCEY.

(Continued.)

XXII.—*Brazieria*, Anc.

"Testa fere staturæ Helicis constrictæ, Bou-"bée, lentiformis depressa, imperforata, stria-"tula, solidiuscula, flavido-corneola; Spira valde "depressa, vix convexa. Anfractus 5 planulati, "sutura lineari divisi; ultimus supra depressus "et acute angulatus, infra multo magis convex-"ior, turgidus. Apertura obliqua, angulata, "lunata, infra convexa, substricta. Peristoma "intus labiato incrassatum, margines lamina "elevata juncti."

Type: Helix velata, Hombron et Jacy.

Geogr. distrib.: Caroline Islands.

This peculiar type of Naninidæ possesses ambiguous characters, and the typical species was placed by Pease, in Trochomorpha, a genus which it appears to me not to belong to.

XXIII.—*Chalepotaxis*, Anc.

"Testa characteribus anatomicis peculiaril us "a Cl. Gredler in diagnosi Naninæ (?) infantilis "enumeratis prædita. Testa umbilicata, albido-"hyalina, fascia unica ultimi anfractus cincta. "Spira convexo-conica, apice obtusâ; anfractus "regulariter crescentes; ultimus major, rotun-"datus, subtus convexus, antice non deflexus; "apertura haud labiata; peristoma simplex, "acutum, sinuatum."

Type: Nanina (?) infantilis, Gredler.

Geog. distrib.: Central China: Tonkin.

XXIV.—*Oligospira*, Anc.

"Testa ejusdem insulæ Acavos commemorans, "a qui us ultimo anfractus valde tumido, am-"bitu oblongo et rotundato et anfractibus cæ-"teris multo minus numerosis, celerius crescen-"tibus et spira depressa, vix elevata nec conica "discrepat. Anfr. ultimus antice perdeflexus."

Types: H. Waltoni, Reeve; H. Skinneri, Reeve.

Geog. distrib.: Ceylon.

XXV.—*Crystallopsis*, Anc.

"Testa inter Papuinas et Geotrochos,—et "Corasias quasi media, tenuis, alabastrina vel "hyalina, vel fasciis opacis cincta, umbilicata, "globosa, tenuis, glabra, angulata vel filocincta "Spira convexa, vel convexo-conica, obtusa; "anfractus minus numerosi; ultimus maximus,

"subtus convexus, turgidus. Apertura sub-"obliqua ampla; peristoma late expansum vel "reflexum, ad columellam late dilatatum, um-"bilicum tamen plerumque non obtectans."

Types: H. Hunteri, Cox; H. Allasteri, Cox, etc.

Geog. distrib.: Solomon's Islands (Guadalcanar, Malanta Islands).

XXVI.—*Sphincterochila*, Anc.

"Testa superne speciebus pluribus generis "Leucochroœ similis, a quo valde differt singu-"lari apertura constricta, sinuata incranataque, "intus interdum hepatica et animali characteri-"bus, teste G. W. Binney, animali Helicis "similis. Prope Macularias verisimiliter collo-"canda."

Types: H. filia, Mouss.; H. Boissieri, Charp.

Geog. distribution: As far as known, restricted to the vicinity of the Dead Sea, and to N. Arabia.

To be Continued.

Young Collectors' Corner

The Succinea Obliqua, Say, of Fairmount Park, Philadelphia, with some remarks regarding the relationship of Succinea Totteniana, Lea.

BY JOHN FORD.

For a number of years I failed to discover in the Park a single specimen of the genus *Succinea*, though many examinations were made by me in localities favorable to their growth. Mentioning this fact to G. Howard Parker, then an active worker in the Philadelphia Academy of Natural Sciences, he informed me that a few might be obtained along a rocky ledge on the north side of the Wissahickon, a short distance east of Ridge Avenue. Some days afterward we visited the locality together, and secured about a dozen specimens all in fair condition. One year later, in company with Dr. J. Bernard Brinton, I visited the place again and captured several more. This was in the morning of a hot June day in 1886, which we mostly spent along the upper reaches of the stream. On returning, towards evening, we wandered into the dry bed of a former pond located between the carriage way and the stream, and within a "stone's throw" of the lower dam. This depression was, perhaps, fifty feet square; with several large willows standing upon the outer bank, and a strong growth of weeds covering the bottom.

While looking for other species supposed to be there, our attention was attracted to numbers of *Succinea* feeding upon the plants, and also upon the willow branches which extended some twenty feet over the basin. Though somewhat surprised to find them in such singular quarters we went quickly to work and secured a large number before night-fall. Many others were obtained a few days afterward by the Doctor's son, Theodore, and a short time later fully a hundred more fell to my share; making in all, over 200 specimens, a wonderful number to be found in so small an area.

All of the shells were transparent, and so delicate in texture that I at first entertained some doubts in regard to the species; this feeling of uncertainty being strengthened by the fact that Professor Gabb does not mention *S. obliqua* at all in his "Catalogue of the Mollusca in the neighborhood of Philadelphia," published in Vol. 13, Proceedings Philadelphia Academy of Natural Sciences. A subsequent examination, however, satisfied Mr. Tryon as well as myself that they were really *Succinea obliqua*, Say. But, in opposition to Mr. Tryon's views, I was and still am of the opinion that they embrace every character claimed for *Succinea Totteniana*, Lea, save the occasional greenish tint, and that no further evidence than the shells themselves is needed to prove *Succinea obliqua*, Say, and *Succinea Totteniana*, Lea, to be one and the same species; allied so closely indeed, that, the latter cannot in a general sense, be justly separated from the former, even as a variety.

With these conclusions fresh in mind, I requested my friend, Horace F. Carpenter, Esq., of Providence, R. I., a gentleman who is thoroughly versed in the mollusca of New England, to forward me some type specimens of the so-called *S. Totteniana*. This he kindly did, and a comparison of them with the Wissahickon shells served only to confirm my previous deductions, which were also fortified by a like comparison of the animals. Some of the specimens received were of a slightly greenish-yellow tint, but the largest number were without it, which fact is another proof that the variation in color is a mere incident arising from peculiar food or slight climatic differences, and therefore of no practical value. All conchologists know that there are hundreds of species in which a difference in color has no specific or varietal recognition whatever.

Mr. Carpenter and myself subsequently collected quite a number of specimens at Lime Rock, near Providence, R. I., and every shell was brown in color. Mr. Carpenter assured me that these were good samples of New England *S. Totteniana*, whatever their relationship might be to *S. obliqua*. If there is a difference in the *form* of the two shells, as is claimed by Mr. Binney, Mr. Tryon and others, I am unable to see it. Nor do I believe that the figures of *S. obliqua* and *S. Totteniana*, given in Gould's "Invertebrata of Massachusetts," pages 448 and 449 represent anything more than what might be the same shell taken at two stages of growth. I certainly have counterparts of each among my Wissahickon *S. obliqua*, and can also match from the same lot, the several type specimens in the Philadelphia Academy's collection, marked *S. Totteniana*, Lea. For these reasons I not only assume that the two species are absolutely one and the same, but will continue to consider them so, unless opposing evidences of a more convincing character than those I have offered, shall be forthcoming.

Philadelphia, August, 1887.

NOTE.—In Mr. Ford's article on "The Helices of Fairmount Park," published in the July number, *H. suppressus* was inadvertently printed *H. suffusus*. If there is such a species as *H. suffusus* Mr. Ford has not heard of it.—EDITOR.

VALVES.

Mr. E. W. Roper, of Revere, Mass., writes: that while at Digby, Nova Scotia, this Summer, he collected a patriarchal specimen of *Littorina littorea*, L., which measured one and three-fifths inches in length, and one and one-eighth inches in width. Its bulk was fully double that of the largest Massachusetts specimens. He noticed also that *Purpura lapillus*, *Fusus decemcostatus*, *Neptunea curta*, *Acmæa testudinalis*, *Margarita helicina* and others, were unusually large and perfect there.

The Philadelphia Academy of Natural Sciences will be one of the seven learned bodies who will lend dignity and weight to the Constitutional Centennial Celebration in Philadelphia, September 15th. 16th and 17th. They take part in the imposing reception and banquet of the 17th.

Rev. F. X. Shulak, Professor of Natural History in St. Ignatius College, Chicago, Ill., kindly informs us that the present Hall used for the display of Natural History objects, is too small for that purpose, and that he is now preparing a larger room for the cabinet.

Dr. Sterki informs us that his friend, Dr. R. Hausler, is in New Zealand, traveling alone and engaged in collecting and studying the Mollusca.

CORRESPONDENCE.

U. S. C. & G. S. STR. "BLAKE,"
Newport, R. I., July 20, 1887

Editor Conchologists' Exchange:

Sir:—When last I saw you a promise was given to write for insertion in your paper—a valuable little one I have found it—some of the results of my attempt at deep sea dredging. With a view to stimulate others about to interest themselves in the study of Malacology, I will give a brief outline of what I have succeeded in doing, and how it came about.

In February, 1884, I was ordered to proceed to Washington, and report for duty upon the

"Despatch," then on special service in the Potomac. Some time after, information reached me that a vacancy would occur upon this ship, a vessel made famous by her deep sea sounding, under several commanders, and natural history researches, under Prof. Alexander Agassiz. No time was lost in making the necessary application, and the following day I was gratified in receiving the transfer orders. She was then at Baltimore, Md., and in the latter part of '84 did hydrographic work off Gay Head, Martha's Vineyard. A change in commanding officers was made in December, and with the new came another field of duty, namely, that of testing the force and direction of ocean currents at any depth. This would be done by an apparatus, a current meter, devised by Lieut. J. E. Pillsbury, U. S. Navy, her present commanding officer, and when in use requires the vessel to be anchored in any depth of water. Many obstacles were encountered and overcome, as was fully proved by the last anchorage, in 1852 fathoms of water, thirty-nine miles off Cape Hatteras; and by demonstrating not only the existence, but the force and direction of a current, at 200 fathoms depth.

As soon as I had grasped the method by which we would anchor, the idea immediately occurred of putting a dredge on the anchoring wire. After some conversation, the commanding officer consented to allow the placing of an ordinary boat dredge upon it. The first trial took place off Fowey Rocks Light, Fla, and much to my disappointment, the net was practically empty. It was suggested that, owing to the meshes of the net being too large, the quantity of "mud" so small, and the rapidity with which the dredge was drawn through the water (about one fathom a second after the anchor was tripped) so great, that the contents were washed out long before it reached the surface. A substitution of an ordinary coffee-sack for the net followed. The next anchorage yielded about one quart of nicely cleaned residue, representing at least a dredge full of "mud." Many trials were made to determine whether it would be better to fasten the rope holding the dredge to the anchoring wire, or merely to allow it to run free by means of "sister-hooks." It was finally decided to fasten it to the wire, about two fathoms from the anchor stock. This method has been followed during the past two seasons.

Thus by taking advantage of a golden opportunity, I have succeeded in securing forty-one dredgings, the greatest depth being 1060 fathoms, in Yucatan Channel.

The work for the seasons of '85 and '86 was in the Straits of Florida, between Fowey Rocks Light House, Fla., and Gun Cay, Bahamas; it yielded twenty-nine dredgings: during '87, between the Tortugas and Havana, Cuba, and between Cape San Antonio, Cuba, and Yucatan; yielding twelve dredgings.

All the specimens collected were submitted to Dr. Dall, who kindly named them, retaining as remuneration, as many as was desired for the Smithsonian Institution.

The results have exceeded all expectations, and, added to those obtained from the surface nets and along shore, yield a grand total of 513 species, running through many families and genera.

The diagnoses of some few species still remain doubtful, but two new ones have been established, a Mitra [first obtained from the dredgings of the 'Albatross'] and a Mathilda; and, one rare Voluta gouldiana, Dall.

It is hoped during the coming season of '88, to continue the interesting work in the passages between the islands of the West Indies, thus giving a continuous series of dredgings, from Cape Hatteras, to the origin of the gulf stream.

Sincerely yours,

WILLIAM H. RUSH, M. D.,
P. A. Surgeon, U. S. Navy.

PUBLICATIONS RECEIVED.

West Coast Shells. A familiar description of the Marine, Fresh Water and Land Mollusks of the United States, found West of the Rocky Mountains. By Josiah Keep, A. M., Professor of Natural Science, Mills College, Cal. With numerous illustrations, by Laura M. Mellen, Teacher of Art, Mills College. Presented by the author, who has edited in "West Coast Shells," a book which every student should have in his library, simply because of its clear, concise diction, the simplicity of its descriptions

and the need of a handy work on the shells of the wonderland west of the "Rockies."

Catalogue and Circular of the California State Normal School, San José, for school year ending May 26, 1887. From Mrs. A. E. Bush, Curator of the Museum

Exchange List of Mollusks from Key West, Bahamas, etc, collected during the Spring seasons of 1885–86, by Wm. H. Rush, M. D., U. S. N.

We welcome to our table the following:—The Naturalists' Leisure Hour Library, Vol. I, No. 1; The Western Naturalist, Madison, Wis.; The Geologists' Gazette, Wishita, Kan.; The Young Geologist, Oskaloosa, Ia.; The Curiosity World, Lake Village, N. H.; The Mohawk Standard, Delta, N. Y.; The Hornet, New Castle, Indiana; The Journal of Science and Art, Cleveland, Ohio.

NECROLOGY.

Spencer Fullerton Baird died at Wood's Holl, Mass., at 3.45 P. M., August 19th. Professor Baird was born February 3d, 1835. At the age of 17 he graduated from Dickinson College, after which he began collecting his famous cabinet of Natural History specimens, which became the nucleus of the museum of the Smithsonian Institution. In 1848 he received the degree of M. D. Honoris Causa, from the Philadelphia Medical College. Dickinson College chose him as its Professor of Natural History in 1845, and subsequently elected him to the chair of Natural History, and conferred on him the degree of Doctor of Physical Science. In 1850, he was made Assistant Secretary of the Smithsonian Institution, and upon the death of Professor Henry in 1878, he succeeded him as Secretary. In 1871 he was appointed U. S. Fish Commissioner, by President Grant.

Alvan Clark, Sr., on the 19th of August. He was the head of the well-known firm of telescope makers, A. Clark & Sons.

Thomas McCormick, Mineralogist of Union Township, Hudson Co., N. J. Mr. McCormick was stung by a spider while searching for minerals, near Union Hill, N. J., for the State Geologist, and expired in terrible agony, from the effects of the bite, August 22d.

Exchange Column.

Terms to NON SUBSCRIBERS, which must be cash with order, are as follows: Exchanges of 20 words, including address, 10 cents; for each additional 10 words the charge will be 5 cents. No exchange will be inserted for less than 10 cents.

Each subscriber to Volume II, will have the privilege of inserting three (3) *free* exchanges of twenty-five (25) words each, *including address*. This rule is made to include those who have already subscribed in good faith at the old rate, 35 cents, or those who have received "New Subscription" blanks and are engaged in soliciting subscriptions at the former price.

Wanted.—Achatinella, Goniobasis and Spherium. Offered.—Land, fresh-water and marine Mollusca. H. P Smith, ustodian Cincinnati Society of Natural History, 108 Broadway, Cincinnati, Ohio.

Wanted.—With localities, identified or not, Io, Angitrema, Lithasia, Strephobasis, Pleurocera, Goniobasis, Schizostoma, Anculosa. Other shells in exchange. Correspondents solicited. A. A. HINKLEY, DuBois, Ill.

Offered.—Botanical and Conchological Specimens, Books, &c. for Books, Papers, Specimens in Conchology, Botany, Microscopy and Entomology. Shells are mostly from California and Europe. Plants from Connecticut. G. R. LUMSDEN, 54 Second St., Norwich, Conn.

Wanted.—In exchange, Indian Arrow-heads and Bird Eggs for Land, Fresh-water and Sea Shells or Bird Eggs. CASPER LOUCKS, York, Pa.

Wanted.—In perfect condition, with localities:—CYPRÆA aurantium, nivosa, exusta, Scotti, thersites, tessellata, physis, eglantina, fusco-dentata and umbilicata. MUREX, Saulæ, palma-rosæ and tenuispina. OLIVA, angulata, manra, Melchersi, porphyria, tenebrosa, tremulina. STROMBUS guttatus, latissimus and melanostomus. VOLUTA, fulgetra, junonia, imperialis, magnifica, reticulata, Rossiniana and rare Asiatic, Australian, African and South American Bulimi, Helicidæ and Unionidæ.

Offered.—50 species of Tertiary and other Fossils from Southern States and Europe, Woodward's Manual of the Mollusca 75 edition: Leidy's Memoir of the Extinct Sloth Tribe, N. A.; Lea's Syn. of Family of Naiades. '52 edition: Hays' Descrip. Inf. Max'y Bones of Mastodons, 10 plates: Agassiz and Gould's

Comp. Physiology, Bohn's edition: Coultas, Prin. Botany, Cryptogamia: Lea's on a Fossil Saurian of the New Red Sandstone Formt'n: Lesquereux's Cretaceus Flora, 50 plates, Smith's Mis. Col. Vol. 4, Neuroptera, Vol. 6 Diptera and Coleoptera, 3 pp out, uncut, or any of the shells on my Price List which I may have in duplicate. Parties not having any of the shells wanted above, need not apply. W. D. AVERELL, Chestnut Hill, Phila.

Offers requested in exchange for many of the smaller mollusks of the waters south of Hatteras. Exchange List ready. W. H. RUSH, M. D., 1308 Green Street, Philadelphia, Pa.

Offered.—Fine specimens marine and land shells for perfect echinoderms. Land and fresh-water shells from the South and Southwest for reptiles in alcohol, D. W. FERGUSON, 138 Wilson St., Brooklyn, N. Y.

Offered.—Unio Leibii, Lea, and 75 other species of N. Amer. land and fresh-water shells. Collectors please send lists and receive mine. JEROME TROMBLY, Petersburgh, Mich.

Offered.—Nassa vibex; Oliva literata, reticularis; Columbella mercatoria; Cypræa caput-serpentis, erosa, helova, lynx, moneta; Nerita tesselIata, peleronta; Fissurella Barbadensis; Donax variabilis; Dosina discus; Cardium magnum. Wanted.—Shells and works on Conchology, JOHN B. WHEELER, East Templeton, Mass.

Cyclas dentata, Terebra dislocata, Sigaretus perspectivus, Sphærium securis and striatinum, Zonites suppressa, Helix fallax and many others to exchange for Land and Fresh-water Shells. A. K. FAIRCHILD, Whippany, N. J.

Offered.—15 species Unios, including Aberti, purpuratus, Schooleraftii, and subrostratus, 5 species Anodonta. Fossil Oyster Shells. Satisfaction guaranteed. Send list. FRANK J. FORD, Wichita, Kan.

Wanted.—American correspondents interested in the study of the genus Pupa (including Pupilla, Vertigo, etc.) of the U. S. Duplicates and other shells for exchange. V. STERKI, M. D., New Philadelphia, O.

Minerals and curiosities to exchange; also a reliable receipt for polishing stones and agates, for every small mineral or curiosity sent me. FRANK S FOOTE, 385 Lyon St., Grand Rapids, Mich.

Offered.—Tellina radiata, Paludina integra, Strombus gigas, Modiola plicatula, Mytilus edulis, Crepidula unguiformis, Lævicardium serratum, Columbella mercatoria, Limnæa elodes, for land and fresh water shells. WM. WEEKS, Jr., 508 Willoughby Ave., Brooklyn, N. Y.

Offered.—Minnesota and marine shells for other shells and minerals. Send lists. JOHN M. HOLZINGER, State Normal School, Winona, Minn.

For Exchange.—A black-walnut Egg Case, having five drawers, each 24x14x2 inches. The bottoms of the drawers come out, leaving slits for partitions. Will exchange it for sets or singles (Bird's Eggs), instruments, or Books on Ornithology or Oölogy. Write first. VAN LEWIS, Potsdam, N. Y.

Humming birds' nests and eggs to exchange for same E. Pleas, Dunreith, Ind.

Specimens of minerals for Dana's book on mineralogy BRET. H. MEACHAM, West View, Goochland Co., Va.

A specimen of fossil shell, a bleeding-tooth shell, and a piece of copper ore, for minerals or foreign coins. FRANK VAN BUREN, 253 York Street, Jersey City, N. J.

A large *fresh* lot of Uniones, nasutus, complanatus and luteolus: also, a few Melantho decisa, all in excellent condition, to exchange for other fresh-water shells of the South and West. JOHN WALTON, 77 Arcade, Rochester, N. Y.

150—1st class side-blown Birds' Eggs to exchange for Coins, Stamps, fine specimens of Indian Arrow Heads and Minerals.—WILLIS P. ARNOLD, Shannock, R. I.

WANTED.

Choice specimens of CYPRÆAS, CONES, OLIVAS, VOLUTAS and HARPAS.

Will pay for same, or will exchange other specimens of same genera. If minerals are preferred in exchange, I have fine specimens of Graphite, Amazon stone, Lead, Iron, and Copper ores, Kryolite, etc. JOHN H. CAMPBELL, 740 Sansom St., Philadelphia, Pa., Correspondence solicited from persons collecting CYPRÆAS.

Price-List of Shells

received since the issue of Conchologists' Exchange No. 9 and 10.

Terms cash with order. Express charges to be borne by purchaser in all cases. Discount of 5 per cent. on orders for $5.00 and over.

ARCA.

Noæ, L..... 20,25
fusca, Brug..... 20

BUCCINUM.

*undatum, Lam.....20 to 30

BULIMUS.

spirifer, Gabb..... 15,20
pupa, L..... 5
Bergeri, Roth..... 10
syriacus, Ehr..... 10

CYCLOSTOMA.

dentatum, Say..... 5
lactaria, Gould..... 5
sulcatum, Mull..... 5

CLAUSILIA.

virgata, Jan..... 3
piceata, Zgl..... 3,5
itala, G. v. Mart..... 5
" " " var..... 5
Grohmani, Phil..... 5
Sebourghiæ, Paul..... 5
ventricosus, Drap..... 3,5
bolensis, DeBetta..... 3
solida, Drap..... 3
Lampedusa, Calcora..... 5
agrigentina, Bourgt..... 3
lineolata, Hild..... 3,5
affinis, Phil..... 3,5
candidilabris, Zglr..... 5
Stenzii, Zglr..... 3,5
calabrica, Mouss..... 5
fusca, DeBetta..... 5
plicatula, Drap. var..... 5
exoptala, Schm..... 3
Vindobonensis, Zglr..... 5
dubii. Drap, var. obsoleta, Schm..... 5
Adamii, Clessin..... 5,10
Recubariensis, DeBetta.. 5
Strobeli, Porro..... 5
Jenoensis, Villa..... 5
orthostoma, Mke..... 5
Styriaca, A. Schmidt..... 5

CHONDROPOMA.

*Shuttleworthii, Pfr..... 20

CHITON.

granulatus, Gmel..... 20,25

FASCIOLARIA

*tulipa, L..... 30,75

FISSURELLA.

Barbadensis, Gmel..... 10

HELICINA.

*Sagraiana, D'Orb..... 25

HELIX.

guanensis, Pocy..... 30,40
planospira, Lam. v. Illyrica..... 15
cisalpina, Stab. v. Adami..... 10
Sicana, Fer..... 10
ammonis, A Schmidt..... 5
muralis, Mull., v..... 5
" " v. crispata..... 5
frigidissima, Adami (2600 m. ab. sea)..... 20
colubrina, Lam. v, Medoacensis..... 15,20
" " v. nubila..... 15,20
æmula, Rossm.. 5
tarentina, Pfr. v. picta... 3,5
bathyomphala, Charp.... 5
meridionalis, Parr..... 3,5
destituta, Charp..... 5
Hermesiana, Pini..... 10,15
meda, Porro..... 3,5
lenticula, Fer..... 3
Baldensis, Villa..... 5,10
carthusianella Drap. v. arvensis, Pini..... 3
turrita, Phil..... 2,5
rupestris, Drap., v. Pini, Adami 2
obvia, Hartm... 5,10
apennina, Porro..... 3,10
setifiensis, Bourgt..... 10,15
strigata, Mull..... 5,10
apiculus, Rossm..... 3
conoidea, Drap..... 3
apicini, Lam. var..... 3
variabilis, Drap. var..... 5
cingulata, Sted..... 10,15
" " v. incerta, Adami..... 10,15
cingulata, Stud. v. adhesina, Paul..... 10,15

HYALINA.

deducta, Peal..... 3,5

MEGALOMASTOMA.

mani, Poey..... 20,25

PURPURA.

*tincta (Key West)..... 10,15
*patula, L..... 35

TROCHATELLA.

*regina, Morelet..... 25,30
*regina, Morelet, var. (1) 30
*regina, Morelet, var. (2) 30

TURBINELLA.

muricatum, Lam..... 30,40
nassa, D'Orb..... 15,25

TELLINA.

radiata, L 10,20

TURBO.

*pica, L..... 25,60

South American.

BULIMUS.

Wagneri, Pfr..... 25 to 30
Ziebmani, Pfr..... 25 " 30
zoographicus, D'Orb.. 20 " 40
phlogerus, D'Orb..... 30 " 40
ovatus, Mull..... $1.00
oblongus, Mull..... 25 to 75
oblongus, Mull, sm. var. 40

HELIX.

polodonta, D'Orb..... 10
lactea, Mull (introduced) 10

HELICINA.

variabilis, Guild..... 5

AMPULLARIA.

*scalaris, D'Orb.....30 to 50

CERITHIUM.

caudatum, Sby... 10

LITTORINA.

fusca, Pfr..... 5

*Operculated.

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Tryon's "Structural and Systematic Conchology," cheap edition, will be sent free for $17.50, and the names of 50 subscribers.

Tryon's "Monograph of the Terrestrial Mollusca of the United States," plain edition, will be sent free for $35 and the names of 100 subscribers.

Sowerby's "Genera of recent and Fossil Shells," 264 plates, ½-morocco, 2 volumes, 8vo. sent free for $52.50 and the names of 150 subscribers.

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To every person sending us before December 1, 1887, the names and cash subscriptions (at the Club-Rate of 35 cents per annum), of 100 persons (new subscribers), a choice collection of shells consisting of 150 species and 500 specimens.

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To every person sending 25 names and the cash, will be sent a collection of 40 species and 125 specimens.

These offers consist of choice shells in fine condition with correct name and locality in each instance; and will furnish numerous duplicates for exchange. A few of the genera from which the above will be selected are as follows: Nautilus, Murex, Neptunea, Pyrula, Cassidulus, Pleurotoma, Triton, Ranella, Nassa, Purpura, Cuma, Harpa, Oliva, Fasciolaria, Littorina, Goniobasis, Paludina, Ampullaria, Crepidula, Nerita, Neritina, Turbo, Trochus, Haliotis, Chiton, Helix, Bulimus, Achatina, Achatinella, Clausilia, Planorbis, Lymnæa, Cyclostoma, Physa, Pholas, Mactra, Tellina, Donax, Venus, Cytherea, Tapes, Cardium, Unio, Anodonta, Modiola, Arca, Pecten and others.

These offers are made simply to increase the popular interest in that beautiful and highly interesting study—Conchology, as well as to extend the subscription list of THE CONCHOLOGISTS' EXCHANGE, a monthly publication to which every shell collector should subscribe.

Special Notice.

We have made 35 cents the price for Clubs of 5 or more subscribers, and in no case will individual subscriptions be received at less than the new rate of 50 cents. By request the above Lists will be held open until December 1, 1887, so that those who intend to subscribe will find it to their advantage to forms Clubs of five or more and thus secure the benefit of the reduction. In addition to these splendid Premiums every subscriber to Volume II has a premium in the shape of three (3) free exchanges annually.

Parties desiring to secure the benefits of the above truly liberal offers, must not keep the names of subscribers together with the subscriptions, until they have completed their list, but should send them as soon as received and we will keep an exact account of them.

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Woodward. Manual of the Mollusca, with Appendix, by Ralph Tate. 642 pp: 23 plates, 441 figures, 270 illustrations. London, 1880 edition. Price $2.50, postpaid. Formerly, $2.60.

The same, 1875 edition, $2.00 postpaid.

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The American Naturalist. Odd copies for sale as follows: Vol. X, January to September; Vol. XV, January; Vol. XVI, July to September; Vol. XVII, January, May to December; Vol. XVIII, January and February; Index to Vol. XII. Prices 20 and 25 cents each.

Westwood, J O. Arcana Entomologica; or, Illustrations of New, Rare, and Interesting Insects. 2 vols, half morocco. London, 1845. Price $27.50.

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The Conchologists' Exchange.

VOL. II. CHESTNUT HILL, PHILADELPHIA, PA., SEPTEMBER, 1887. No. 3

A Publication Designed for Conchologists and Scientists generally.

ISSUED MONTHLY

BY

WM. D. AVERELL,

EDITOR AND PUBLISHER

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THAT the antipodes will not be behind in the struggle for scientific knowledge is a foregone conclusion. In a region where Nature has been so lavish in her gifts, as in Australia, one would expect to see a widespread interest in Natural Science. But not until very lately has the scientific education of the young commanded the attention which its importance deserves. So far as Conchology is concerned, much has been done by Reeve, Philippi, Kiener, Hombron, Angas, Cox and others, but we think the visit of Baron Maclay has had much to do with stirring up the lagging interest. Mr. John Brazier has kindly furnished us with the Rules of The Natural History Association of New South Wales, one of which declares the object of the Association to be "the encouragement of the study of nature, more particularly by young people," in which laudable enterprise we cannot but signal them "to go ahead at full speed." We may be far ahead of them in our Agassiz Chapters and kindred societies, but their country is comparatively unexplored, and is in addition very rich in peculiar and unique forms of life.

WE confess to have read Mr. Charles T. Simpson's article upon "The Distribution of Shells in the Tropics," with great interest. We cannot but deplore the work of a natural force which no doubt is the cause of so many migrations among mollusks. A trip to a new region has added zest given to it when new forms are discovered, new brain-food is found, new light thrown upon murky subjects. But when, after a tropical storm such as Mr. Simpson so aptly describes, the coast becomes the habitation of species collected and described months before in a distant region, the occasion loses interest. The word "introduced" is becoming far too common, and whether done by man or a storm the abstract effect is the same. But such is Natural History; we must record facts, and perhaps the most curious element of our work is the phenomenon of distribution. Mr. Simpson's argument is strong, well taken, and we think highly plausible.

IF every subscriber to THE CONCHOLOGISTS' EXCHANGE would send at least one new subscriber's name to the paper it would greatly encourage us, and be returned with interest.

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THE SHELL-BEARING MOLLUSCA OF RHODE ISLAND.

BY HORACE F. CARPENTER.

Chapter XXXIX.

Genus Zirphæa Leach—1851.

In Pholas, the dorsal margin is supplemented by two accessory plates; Zirphæa has a broader shell without accessory plates. It has but three species, one of which is common to the Atlantic shores of Europe and America.

143.—Zirphæa crispata, Linn.

Synonyms:

Pholas crispata, Linn and older authors. Pholas bifrons, Da Costa. Pholas latus, Lister. Solen crispus, Gmelin. Zirphæa crispata, all modern authors.

Shell oblong-oval, thick and strong; valves touching only at the hinge, and at the middle of the base, gaping widely at both ends; each valve is separated into two nearly equal parts by a broad furrow passing from the beaks to the base; the anterior half is covered with radiating toothed ribs. Length, two inches; height, one and a half. It is common in all parts of Northwestern Europe, and in Northeastern America as far south as Cape Cod; very few specimens are found this side of the Cape. Very fine and large specimens are obtained at Nahant Beach in hard clay.

SUB-FAMILY JOUANNETINÆ.

Anterior ventral gap, closed in adults by a callous plate.

There are five genera, seven sub-genera, and thirty-five species, none of which have yet been discovered in R. I. Martesia cuneiformis Say, and Diplothyra Smithii, Tryon, are found burrowing in oyster shells on the coasts of the Southern States. The former has been found at New Haven, Conn., by Dr. Perkins, and the latter at Staten Island, and as they occur boring into the Southern oyster, of which we plant thousands of bushels annually in our bay, it is among the possibilities that both these species might be inhabitants of Rhode Island.

FAMILY SOLENIDÆ.

Shell long, gaping at both ends; ligament external. This family is divided into two subfamilies, Soleninæ and Pharellinæ.

SUB-FAMILY SOLENINÆ.

Shell *truncated* at both ends; umbones *terminal*, with one tooth in each valve. Siphons of the animal *short* and *united*. There are six genera, two of which are fossil. The genus Solen, Linn, 1757, with thirty-seven species, is represented on the Atlantic coast of the U. S. by only one species, Solen viridis, Say, which inhabits from New Jersey to Florida. The genus Ensis, Schum or Ensatella, Sw. with fourteen species is represented on our coasts by.

144.—Ensatella Americana, Gould.

In the twelfth edition of "Systema Naturæ, page 1114, 1767, Linnæus described an European shell which he called Solon ensis; our species resembling it very much and considered identical with it, has, until late years, been called by the same name. In 1817, Schumacher discovered that Solen ensis was not a Solen; that genus having straight shells and provided with one tooth in each valve, while these shells were curved and had two teeth in one valve and three in the other. Then he proposed a new genus for these shells and called it Ensis, from the type species of the old genus Solen. Then its name became Ensis ensis. In 1840 Swainson objected to calling the generic and specific names of shells by the same term, so he proposed the name of Ensatella, which was approved of and adopted by other authorities. Then it read Ensatella ensis, but having got this point finally settled it seemed that our ensis was not the European ensis at all. Gould was the first to notice the differences, but unwilling to make another change he called it provisionally variety Americana. All modern

authors, *i. e.* since 1865, use this name for our species.

A full scientific description of the animal was given in Silliman's Journal, p. 287, in April, 1872. The shell is six inches long by one inch in height, covered with a glossy yellowish-green epidermis; hinge at one end. A very common shell in R. I. called long clam, razor fish, &c., and is considered by some people very delicious eating. They live in the sand, where they burrow from two to three feet deep. They come to the surface sometimes, but it is difficult to obtain one; if we take hold of a specimen and attempt to draw it up out of the sand (they stand on their heads, as we might say if they had any, with only an inch or two of the posterior portion of the shell projecting above the surface of the sand) it slips through our fingers and descends to the bottom of its burrow with astonishing rapidity. The best way to obtain them is to look at extreme low-water mark, where their presence is indicated by an orifice resembling a key-hole, and then dig for them lively with a clam hoe.

I think some disease must have affected this species at one time, in our bay, several years ago, for at low tide might have been seen one Summer, thousands of specimens in every direction on our sandy shores, projecting two or three inches out of the sand; all these specimens were either destitute of an inhabitant, or the animal was dead and half devoured by Starfish or Ilyanassa obsoleta, our common cannibal snail. I noticed this more particularly near Buttonwoods, where I gathered about a half a peck of these shells in as good condition as though they had been taken alive.

SUB-FAMILY PHARELLINÆ.

Shell transverse, elongated, gaping and *rounded* at each end; umbones *sub-central*. Siphons of the animal *long* separated for half their length. There are eight genera, three of which are fossil. Three genera are represented in New Eng. each by a single species.

GENUS SILIQUA, MUHLFELDT, 1811.

Shell smooth, oblong; epidermis polished: an umbonal rib extends across the interior of each valve. There are twenty species of this genus.

145.—Siliqua costata, Say.

Syns:

Solen costatus, Say, Valenc. Solen Sayii, Griffith. Solen Nahantensis, Des Moulins. Solecurtus costatus, Gld., DeKay, Stimp. Siliqua costata, Tryon, Dall.

Shell, smooth, oblong, thin and fragile, rounded at both ends; beaks very small, placed at the anterior fourth; epidermis shining, light yellowish-green, crossed by three lighter colored broad rays; interior livid, showing the exterior bands; in each valve is a broad white rib extending from the beaks, two-thirds across the shell. Length two inches, height eight-tenths. Inhabits from Cape Hatteras to the Gulf of St. Lawrence. It has not yet been found in R. I. to my knowledge, although Gould says "it is found abundantly on every sandy beach and probably inhabits the sand in shallow water." It is common in Massachusetts Bay, and is frequently taken from the maws of cod-fish.

GENUS SOLECURTUS, BLAINVILLE, 1824

These shells are sometimes called short razors, as the shells are like a Solen cut off or shortened, while the animal is as long as a Solen. The beaks are nearer the centre, and the shell is wider and more flattened.

146.—Solecurtus gibbus, Spengler, 1794.

Syns:

Solen gibbus, Spengl. Solen Caribæus, Lam., Hanley. Solecurtus Caribæus Con., Gld., DeKay, Woodward. Siliquaria gibbus, Adams, Tryon. Tagelus Dombeyi, Chenu. Tagelus gibbus, Dall.

Shell oblong, transverse, slightly curved, thick and strong, posterior end rounded, anterior truncated; the surface covered (when not worn off) with a strong dark-colored epidermis. Length four inches, height one and a half, breadth one inch. Inhabits from Cape Cod to

Gulf of Mexico and West Indies. They live buried in mud and sand more than a foot below the surface, and beyond low water mark, and are not easily obtained, as they cannot be reached by the dredge. I found one specimen alive at Apporang, but single valves are common on all our shores, and often both valves united, without the animal, and with the epidermis half worn off.

To be Continued.

BRIEF NOTES ON THE LAND AND FRESH-WATER SHELLS OF MERCER CO., ILL.

BY WILLIAM A. MARSH.

(Continued.)

54.—Anodonta plana, Lea.

Shell smooth, oval, inflated and solid. Beaks large, but somewhat depressed and rounded over the umbones. Epidermis from light olive to dark brown, and sometimes greenish. When young this shell is often beautifully rayed, although it is sometimes found without rays. Undulations on beaks few and small. Nacre varying from dull salmon to white. Anterior portions of shell slightly rounded. This shell is found only in our creeks where it attains a large size, and is now very rare. It differs from *grandis* in being much more inflated, very much more solid and attains a larger size, and when adult it is very much more cylindrical I have collected specimens 7 inches wide, 4 inches long, and 2½ inches thick. It seems to prefer muddy bottoms, where there is little or no current in the stream. I often find it in mill ponds and sometimes in the mill races. As found here it is as more easily separated from *grandis* than is *A. corpulenta*.

55.—Anodonta corpulenta, Cooper.

Shell smooth, oval, very much inflated, undulations prominent, beaks massive, very much swollen and incurved, having a copper colored summit. The epidermis varies from dark brown and olive to dark green. Found both with and without rays. Nacre copper colored. This fine species is found very abundantly in the river sloughs and the small lakes of the Bay Island. It never ventures into the river, preferring soft, muddy bottoms and still water where there is no current. It often attains a large size; the largest *corpulenta* in my collection being 4½ inches long, 7 inches wide, and 3 inches deep. The largest *grandis* I have, was received from Mr. A. A. Hinkley, of Washington Co., Illinois, collected by him in Southern Illinois. It measures 4 inches in length, 6½ inches in width, and 2 inches in depth. *Corpulenta* is extremely variable, as individuals are often found quadrate, with the hinge line perfectly straight, very tumid and almost round before and behind. I have one remarkably fine specimen which measures only 4 inches in width and measures the same otherwise as the one just described Although *corpulenta* is generally very much inflated, specimens are often found that are much depressed.

56.—Anodonta suborbiculata, Say.

This very fine shell is found only in the sloughs and small lakes of the Bay Island. Fifteen years ago it was quite common, and 30 or 40 specimens might have been collected in a single day; but it is now extremely rare and the collector may think himself well off if he secures 2 or 3 specimens in a whole season. Dead shells are often found along the margin of Swan Lake, but live ones are seldom obtained. For two or three years I have been offering the fishermen 25 cents a piece for every live specimen, but as yet they have failed to find it. This, our most attractive Anodonta, has a geographical distribution from Indiana to Kansas, and is probably not common in any particular locality. But five localities for this shell are reported in Illinois.

Shell suborbicular and somewhat depressed. Beaks not prominent, with small undulations and few in number. Epidermis pale green, light yellow and light brown in different specimens. Growth lines not prominent; the whole surface of the shell covered with beautiful mi-

croscopic lines. Shell usually covered with faint green rays which disappear with age.

57.—Anodonta Ferrussaciana, Lea.

Shell smooth, oval and sometimes cylindrical; slightly inflated, sometimes slightly depressed posteriorly. The epidermis varies from dark olive to light brown. Shell usually covered with broad green rays, while specimens are found almost rayless. Umbones usually rounded, sometimes slightly angular. Growth lines prominent, often with dark brown concentric lines running parallel with them. The beaks are only moderately prominent and are covered with rather coarse undulations running in a circular direction toward the posterior portion of the shell. There is one northern species, *Anodonta subcylindracea*, Lea, which in some respects may be confounded with this shell, but *subcylindracea* is a more cylindrical species, has more prominent beaks, with finer and more numerous undulations than on *Ferrussaciana*. Adult specimens of *subcylindracea* are more constricted posteriorly, while those of *Ferrussaciana* maintain their symmetry. This shell is found from Ohio to Colorado, through all the Northwestern States. I have just received a specimen from Mr. Charles T. Simpson collected in Lodge-pole Creek, Colorado, having a pinkish nacre; while Mercer County specimens are white, shining, and iridescent. It is found here only in Pope and Edwards Creeks and has now become very rare owing to the ravages of the musk-rats and raccoons. I used to find it common in Edwards Creek, associated with *A. edentula*, but have not found a single shell of this species for three years.

To be Continued.

ON THE DISTRIBUTION OF LAND AND FRESH-WATER SHELLS IN THE TROPICS.

BY CHAS. T. SIMPSON.

The fact that many marine species of mollusca are widely distributed is a cause of no great wonder, since the sea is their home and the young are all swimmers, so that by this means, and the ocean currents no doubt, many specimens appear in localities where we should least expect to find them. But the land and fresh water mollusks when found in countries or islands separated by the sea, are usually accounted for on the supposition that their separate habitats have been connected by land passages since the appearance of existing species, or that they were introduced to one or the other localities through the agency of man.

I believe that, in the tropics especially, the rivers and the sea may have had much to do with the distribution of many of these forms.

One who has never visited the tropics can have no idea of the immensity of the forests of that region; or of the wonderful vigor and exuberance of vegetable life. In these countries where a large annual rain fall occurs, the giant trunks of trees cover the ground thickly, forming in many places a solid wall of forest a hundred and fifty or two hundred feet high. The sun pouring down a flood of brilliant light and heat into its depths, literally fills the entire space with minor growths of every description; lianes and sipos in endless variety, hanging in festoons from the limbs above, coiled and twisted around each other like writhing serpents, or drawn taut like the rigging of a ship, amid creepers, water vines, shubbery and broad-leaved plants of unnumbered species. These giant trunks, often fifteen or twenty feet in diameter, are in reality vast aerial gardens bearing aloft enormous quantities of Epiphylliums and Phyllocacti, ferns, orchids and air pines, as well as the immense growth of vines of every description. A species of Ficus related to the fig, and rubber tree of our hot-houses, often lodges its seeds in the forks or on limbs fifty, a hundred, or a hundred and fifty feet above the ground. This plant, the Matapalo, or Scotch Attorney as it is called, sends down a tiny air root which reaches the ground and begins to feed the plant above. Another and another quickly follow, and then a network of cross-roots are formed until the tree is clothed from the ground to its loftiest limbs with fetters that never loose their hold until they have strangled its life out of it. I shall never forget the feeling of awe and even terror that I experienced when, reverently and with bared head I first stood before

such a mighty forest on the mainland of Honduras. I never until then realized how utterly insignificant and powerless I was in the presence of Nature. But this is a digression. Such a forest is the natural home of hosts of the arboreal tropical land snails, the Bulimi, the Achatinas, Orthalicus, Liguus, some of the Helices and many others. Among these aerial gardens every variety of food and shelter is provided that they can possibly need.

During the rainy seasons of the tropics, thousands of such trees with their immense collections of vegetable and animal life are undermined by rivers and torrents and carried out into the sea. Nor is this all. From Cape St. Roque along a vast stretch of the South American coast far to the northward, and at many points in the West Indies and the main land of Central America, the sea is constantly encroaching on the land, undermining and carrying away millions of acres of this virgin forest. I have seen hundreds of acres of such trees on the coast of Honduras slowly toppling into the sea. Many of these carry not only all their arboreal mollusks with them, but with the tons of soil, undergrowth and shrubbery which adhere to their roots, a great variety of terrestial species. Such rafts of floating vegetation are not unfrequently met with in tropical seas, and borne by ocean currents or carried by storms are often landed within a moderate length of time on other shores. In sheltered caves on the Island of Utilla and other of the Bay Islands, and on the shores of Florida, I have seen thousands of such stranded monsters, some submerged all but a few branches, others at the tide line, and still others thrown high and dry by storms, out of the reach of the sea at ordinary times. I conceive that many snails carried on the higher limbs of such trees, in the sheltering crevices of the Matapalos or among the rank epiphytal vegetation might make such a sea voyage in safety, and being thrown high and dry in the edge of a forest in similar latitudes might find all the circumstances favorable for living and producing an established colony in their new home. Especially would such mollusks as the Strophias, Glandinas, Truncatellas, Auriculas, Pythias and some of the Stenogyras, whose natural habitat is near the sea and which are sometimes exposed to its spray, be likely to survive such a cruise, and it is just such species that we find introduced in the greatest numbers in the warmer parts of the earth. Glandina truncata is an abundant shell throughout a great part of Florida, and it is also plentiful in Cuba, and no matter which country it was introduced to it has undoubtedly crossed the sea. So of Strophia incana, a Cuban species abundant on the Florida Keys, Stenogyra gracillima, several West Indian Truncatellas, and Auricula pellucens, all found plentifully in Florida and within the influence of the sea. Orthalicus undatus Liguus fasciatus, Bulimulus multilineatus and other species found on the southern part of the peninsula of Florida are arboreal and have come from Mexico, the West Indies, and South America. These species during periods of rest secrete an epiphragm by which they adhere with great tenacity to the branches and trunks of trees so firmly that the shell will often break before it will let go, and in many cases must be collected by carefully cutting away the bark to which it adheres. This epiphragm seems to be impervious to the influence of wind, sunshine or moisture, and is only dissolved by the animal when it revives its activity. During such a period of æestivation it seems to me these snails might make such a passage at sea with little difficulty if they were borne above the crest of the waves.

To be Continued.

DESCRIPTION OF NEW GENERA OR SUB-GENERA OF HELICIDÆ.

BY C. F. ANCEY.

(Continued.)

XXVII.—*Pleuroxia*, Ancey.

I propose the above name for Angasella (type: Helix cyrtopleura, Pfeiffer), as the latter name is already pre-occupied in marine shells.

Geog. distrib.: Central and Southern Australia.

XXVIII.—*Calostropha*, Ancey.

"Testa depresso conica, late umbilicato, poly-"gyrata. Apertura parva; peristoma reflexum, "dentatum."

Type: Helix Raffrayi, Tapparone-Canefri.

Geog. distrib.: 1 sp.; Western New Guinea.

XXIX.—*Eurystyla*, Ancey.

"Testa lœvigata, solidula, nigra vel brunnea "vel virescens, nigro-cincta, plus minusve ob-"longa vel depressa, summo valde obtuso "grosso; habitus fere quorumdam specierum "generis Cochlostyloe simillimus. Umbilicus "nullus vel rimiformis. Columella recta, "oblique declivis. Peristoma tenuites expan-"sum et incrassatum."

Types: Helix cerina, Mor.; H. viridis, Desh

H. cerina shows the above Malgachian group, altogether resembling so much the Philippinese species of Cochlostyla that H. viridis, the first known species of the section was always placed by authors in this genus, to be much more nearly allied to Helix lancula, Guillaini, etc. (belonging to Ampelita), than may be supposed at once.

Fruticotrochus, Kob., does not appear to differ at all from all the described species of Trochomorphodes, Nevill (type: H. acris, Bens. and conulus, v. Mart.), excepting in having a larger umbilicus. Dr. von Mollendorff unites both.

XXX.—*Cavicola*, Ancey.

"Testa albido, opaca perforata solidula, con-"icoglobosa. Spira elevata, apice acutiuscula, "conica; anfractus saltem 7, regulariter len-"teque crescentes, convexi, sutura profunda, "divisi, ultimus tumido-rotundatus, inferne in-"flatus, medio filocinctus post medium lœviga-"tus, antice non deflexus Apertura lunata, "fere recta; peristoma simplex, tenue, basi "sinuatum et antice tantisper provectum, prope "umbilicum parvum minute expansum."

Type: Streptaxis (?) cavicola, Gredler.

Geog. distrib.: The type has been found in a cave in Southern Hunan (Central China.)

I agree with Hende in placing this species in Naninidæ rather than with Streptaxis. It resembles, however, Str. alveus, Dunk, a South American species, in a few particulars, but is otherwise entirely distinct. As far as known the group, to which the latter belongs, is not an Asiatic one. Cavicola approaches Sitala and Microcystis.

XXXI.—*Bathyaxis*, Ancey.

"Testa characteribus nonnullis adeo Cœliaxi "peraffinis ut sectio hujus generis tantum haberi "possit, sed semper integra; columella recta, "incranata, plica interna extus non conspicua "instructa; umbilicus apertus, profundinimus "(apice testæ perspicuo); peristoma haud den-"tatum, expansiusculum nec continuum."

Type: Cœliaxis Layardi, Ad. & Angas.

Geog. distrib.: Cape Colony; Albany Coast.

XXXII.—*Nesobia*, Ancey.

"Testa subsolidula fusca, perforata, haud "nitens, oblonga, liris spiralibus interruptis, ob-"solete notata, striata. Spira obconica, apice "papillata, lœvi, obtusata. Anfractus convexi, "primi sutura profunda, inferiores profundiore, "quasi excavata separati; ultimus dimidium "testæ saltem æquans, oblongus. Peristoma "subsimplex, ad columellam late expansum."

Type: Bulimus Helenæ, Quoy et Gaym.

Geog. distrib.: St. Helena.

Concluded.

Young Collectors' Corner

The Fresh Water Mollusks of Fairmount Park.

BY JOHN FORD.

Sept., 1887.

About a dozen genera of fresh water mollusks, embracing some twenty species, inhabit the Schuylkill within the limits of the Park. But here, as elsewhere, their presence in large numbers at certain points depends not only upon a plentiful supply of food, but upon other favor-

able conditions as well; some species preferring beds of sand or fine gravel, others of mud, &c.

Nowhere in the Park, perhaps, are all of these conditions so favorable as upon the breast of Fairmount dam when the coping is a foot or so above the water, which is then about the same in depth Unfortunately for the collector, the dam has been submerged during the most of the Summer, but the coping and "overshute" are both dry at present and will probably remain so during September and October. At this point, in the Summer of 1885, I secured on one occasion eleven different species, all alive and in excellent form. These were *Planorbis trivolvis*, *Planorbis bicarinatus*, *Vivipara decisa*, *Vivipara subcarinata*. *Somatogyrus altilus*, *Amnicola limosa*, *Melania virginica*, *Physa heterostropha*, *Sphærium similis*, *Spherium sulcatum*, and *Pisidium abditum*. A majority of the species were abundant, and in all stages of growth. Of course, persons are not allowed on the dam except by permission of Mr. Jno. L. Ogden, Chief of the Water Department, but a note to his address, 13th and Spring Garden Sts., will doubtless bring a favorable response.

The former feeding grounds of *Sphærium similis*, below the sewer opening under Girard Avenue bridge, have been nearly buried by the "Land Makers" of the Park. At this locality I have collected large numbers of perfect specimens, and it is just possible that some may still be found there. I have never seen them in the Schuylkill except at this point, and upon the dam breast, as before mentioned. *Pisidium abditum*, though not plentiful, were associated with them in both places. Several of the other species named can still be collected here.

On the flats fronting the river road above the tunnel, *Limnæa desidiosa* may be seen delving in the mud as of old, although a fine colony of *Valvata tricarinatus*, which formerly inhabited the southernmost flat, no longer exists; the bed of fine gravel on which they flourished having been buried under the new roadway. A few can still be found on the little patches of sand scattered along both sides of the river, but their days are evidently numbered. The "March of Improvement" will soon obliterate these favorite haunts, and with their destruction the species will, probably, disappear altogether from the Park.

On the same side of the river, midway between the Girard Avenue and Columbia bridges, *Ancylus rivularis* makes its home during the Summer months. This species also inhabits the lily ponds south of Horticultural Hall. In the river it should be sought for on submerged stones and bits of wood; in the ponds, underneath the floating leaves. Good specimens of other species may also be gathered at various points along this side of the river between the two bridges.

The shore at Robinson's knoll, near the mouth of the Wissahickon, though a favorite resort of collectors, yields but a few species. They are generally in good condition, however, and so are well worth looking for. In the Wissahickon above the dam I have taken numbers of *Planorbis parvus* and *Physa heterostropha*, but have seen no other species in the vicinity.

It is said that at least two species of *Amnicola* flourish among the stones higher up the stream, and this statement may be correct, though I have searched for them there many times without success. Of the western side of the river from Chamouni to Columbia bridge I know very little. The same may be said in regard to the shores of Peter's Island. Still, as the littoral conditions of this island appear from a distance much like those of the adjacent island known as Belmont Landing, I would not be surprised to learn that a number of species, including several of the genus *Unio*, were living there. But however plentiful they may prove to be, it is hardly probable that they will surpass in numbers or perfection those strewn at times upon the river shore of the last named island. A few days ago Mr. John H. Campbell and myself collected here a majority of the species I have named, together with *Unio complanatus*, *Unio nasutus*, and *Anodonta fluviatilis*. All were what are known as "dead shells," but as they had been driven under the bushes by the steamboat waves, and thus not exposed to the sun, the most of them were in excellent condition; both species of *Vivipara* being unusually large and fine. The localities referred to are near the ends of the island, both the upper and the lower, although several species can always be found on the little sand slip adjoining the north side of the wharf. The *Somatogyrus*

altilis in the Philadelphia collection of the Academy of Natural Sciences were gathered here, and it is probable that no finer specimens inhabit the river.

I have never seen a living specimen of *Margaritana undulata* within the Park limits, though its presence near the "Falls" has been reported. *Limnæa catascopium*, another species common to the lower portions of the river, are, I think, absolutely unknown above Fairmount dam. There appears to be something in the ebb and flow of the tides which is necessary to the existence of this species, if not to that of *M. undulata*, also.

In conclusion I will add that *pure olive oil* applied to "dead" fresh water shells will, in most instances, restore their natural colors, and at the same time prevent the epidermis from cracking; a mishap that leaves a shell as unnatural as it is unsightly.

VALVES.

Mr. E. J. Smith, of Natick, Mass., claims to have found a specimen of *Littorina littorea*, measuring $1\frac{3}{32}$ inches in length, and several others nearly as large, on a reef called the "Dry Breakers," at Beverly, Mass.

The following extract from a letter received from Mr. Royal Holbrook, a member of "Conchologists' Exchange Club, No. 1," will show what may be done by active young searchers for shells. * * * "I have about 125 specimens, "(*H. multilineata*, Say), which I gathered in "the following way: Opposite Winona across "the lake, and next to the bluffs is a large "meadow which contains an abundant supply "of land snails, as well as many Pupas. "There is also a spring, and from this is "a ditch leading from it to the lake. Last "Spring, when the frost was coming out of the "ground, I visited this place and found the "Helices upheaved from the earth into the "ditch, and on its sides, and I found also that "they hibernated in clusters of ten to fifteen in "a single place."

Young men and women under 18 years of age are charged a membership fee of but one shilling per annum in The Natural History Association of New South Wales, and are allowed every advantage enjoyed by older members, who are charged five shillings.

The following new species of land and fresh-water shells from Maclay Coast, New Guinea, were found by Baron Maclay and named by John Brazier, F. L. S.: *Helix (Geotrochus) Maclayana; Helix (Geotrochus) Goronduensis; Helix (Rhysota) Achilles; Melania Wallorien-sis; Paludina Kowiayiensis.* A new Onchidium, *O. chameleon*, Brazier, was found at Lane Cove River, Port Jackson, N. S. Wales; also, a new Bulimus, *B. Rossiteri*, Brazier, was found at Nehone Bay, Northwest coast of New Caledonia both of which were described by Mr. Brazier.

Mr. C. A. Hargrave of Danville, Ind., writes that he met with great success on a collecting trip along the Wabash River at Montezuma, Ind., lately, and secured a half-bushel of Unios of different species in a short time.

Changes of P. O. address: George W. Puterbaugh from Greenfield, Ind., to Elkhart, Ind. J. M Henderson from Lawrenceville, N. J., to Harvard College, Cambridge, Mass.

Exchange Column.

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ISSUED MONTHLY

BY

WM. D. AVERELL,

EDITOR AND PUBLISHER

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BEFORE the streams freeze it would be well for our younger readers to avail themselves of the mild weather and secure recruits for the Winter aquarium. There is no better instructor in Conchology than a well-managed "water garden," for there you may see not only the shell, but its tenant, while living and active. One of the interesting sights in a shell aquarium is to watch a Lymnæa eating the *Confervæ* upon the sides of the vessel. A dry garden for land shells, such as Helix, Pupa, &c., may also be attempted. Care should be taken to keep the aquarium from freezing.

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THE SHELL-BEARING MOLLUSCA OF RHODE ISLAND.

BY HORACE F. CARPENTER.

Chapter XI.

Genus Mesopleura, Conrad—1867.

"Conrad's Catalogue of the Family Solenidæ" gives but three species of the genus Mesopleura, one of which inhabits Java, one California, and the other the Atlantic Coast of the United States: this is

147.—Mesopleura centralis, Say.

Shell small and delicate, transversely oblong-oval; surface smooth in the centre and wrinkled concentrically at each end; a reddish stripe or band passes from the umbones across the valves, which can be seen through the shell from the inside; epidermis pale yellowish; interior smooth and shining; hinge teeth nearly central. Length, one and a half inches; height, one-half inch; breadth, seven-twentieths.

This species is of southern distribution, and is never found north of Cape Cod. There is a difference of opinion among Conchologists whether or not this species is identical with the European Solen divisus, Spengler, 1794. If they are the same, its name should be that of Spengler, a shell with several synonyms, such as, fragilis, Pult, 1799; bidens, Chemn, 1795; divesa Gray, &c., &c. Our species was described by Say in Journ. Acad. Nat. Science, Phila., II: 316, 1822.

Gould says, "It is occasionally found at New Bedford and other places in Buzzards Bay. It is rather common about Rhode Island." I have never been able to find a single specimen or even a piece of a valve in this State. Perhaps he meant the Island of Rhode Island, and as I have not examined the eastern shore of Middletown, opposite Little Compton and Tiverton, I give him the benefit of the doubt.

FAMILY SAXICAVIDÆ.

Shell equivalve, thick, gaping at both extremities; hinge with one cardinal tooth; ligament external, prominent, solid. Siphons of the animal, large, elongated, covered with a thick skin, the orifices fringed. There are three genera with about thirty species.

Genus Saxicava, Fleurian de Bellevue, 1802.

Shell, when young, with two minute teeth in each valve; toothless when adult.

The Saxicavids are found in crevices of rocks and roots of sea weed, moored by a byssus of threads spun by the foot of the animal Also found on oysters, adhering to the irregularities of the surface. They also bore like the Pholas into clay, peat and even into limestone, but more frequently occupy a habitation previously excavated by some other species.

148.—Saxicava rugosa, Linn, 1767.

Syns:

Mytilus rugosus, Linn. Mya arctica, Linn.

Shell oblong-oval, rough, irregular in shape, white, inequivalve and inequilateral, gaping; the posterior end sometimes rounded and sometimes truncated; epidermis dingy yellow, thin; beaks prominent, from which two ridges run along the posterior slope, one near the margin, and the other to the lower angle; in some specimens these ridges are armed with spines; valves generally toothless, but sometimes with a rudimentary tooth in one valve and a corresponding pit in the other. Length, one inch; height, three-fifths; breadth, two-fifths.

No description of this species can be given that is not liable to mislead. It is more variable in shape than any other shell known, and a list of its synonymy would be discouraging to a novice; fifteen or more species, placed in five different genera, and even put in different families, have been made from varieties of this species.

Binney thinks there are two species in New England, rugosa and arctica, the latter a northern species, inhabiting Europe as well as America. Tryon, on the other hand, includes both species under Saxicava arctica. Linnæus also described in 1767. Habitat, Atlantic and Pacific Coasts of North America; northern coasts of Europe to the Mediterranean. "Common from Mass. Bay to Labrador, from low water mark

to fifty fathoms or more." (Verrill.) It is not uncommon in Long Island Sound, but I have not yet observed it in Rhode Island.

The other two genera of the Saxicavidæ family are Panopœa, with eleven species, and Cyrtodaria with two. Panopœa Norvegica, Spengler, and Cyrtodaria siliqua, Chem., both large, rough and coarse shells, inhabit New England to the banks of Newfoundland, but is not found south of Cape Cod.

FAMILY MYACIDÆ.

Shell transverse, gaping at both ends; left valve with a single, broad, erect tooth, received into a pit in the opposite valve. Animal with the mantle almost entirely closed; siphons united, partly or wholly retractile. A small family composed of three genera: Tugonia, with six species, all inhabiting the West Coast of Africa; Platyodon, with one species, inhabiting California, and Mya, with three species.

Genus Mya, Linné, 1740.

Although the genus consists of but three species, the individuals composing *one* of these species are the most numerous and prolific of all known shells. This species, inhabiting the whole of Northern Europe, Asia and America, is

149.—Mya arenaria, Linné, 1767.

Syns:

Mya mercenaria, Say, 1822. Mya acuta Say, 1822.

Shell ovate, equivalve, gaping at both extremities; surface chalky white, covered by a thin, rusty brown, wrinkled epidermis; beaks small, pointed curved forwards; an erect tooth in the left valve fits into a deep excavation in the right valve directly under the beaks. Length, five inches; height, three inches; breadth, two inches. This species is called the Gaper, Old Maid and *Clam*. In Greenland they form the principal food of the Walrus, the Arctic Fox and various birds. A *Clam Bake* is one of the peculiar institutions of Rhode Island. Whether clams are more abundant, or of better quality in Rhode Island than elsewhere, I cannot say, but they do not seem to be used as an article of food to any great extent outside of our little State. Hundreds of bushels are baked and consumed daily during the Summer at our shore resorts, and there are several places in Providence where they may be obtained, boiled, fried or steamed, every day in the year. Notwithstanding the immense run on their banks, the supply is never exhausted, and no perceptible dimunition in their number is observed. Although the specific name, arenaria, means "of or pertaining to sand," they are found just as plentifully in mud or among stones as in sandy places. They inhabit from half tide to forty fathoms in depth, about a foot below the surface; the animals are provided with a very extensile tube, which extends to the surface through which they obtain their food, as explained under the description of Class Pelecypoda, on page 18, Vol. II.

John Winthrop, in Journal of the Royal Society, 1634, says, "These clams feed only on sand," but their real business in life is, to purify our waters, by absorbing all manner of organic or inorganic matters, which would otherwise, by its accumulation, poison the air, destroy our fish, and render existence intolerable in the vicinity of our beautiful shore resorts."

The term clam is applied to this species only in New England. The Indian name was sickishuog. The Chinese call it Tsega. In New York and farther south a clam means what we call a quahog, Venus mercenaria, but the original owner of this name is a ponderous bivalve of the Pacific Coral Lagoons, Tridacna gigas, a small valve, of which may be seen hanging over the door of an oyster saloon on College St., in Providence. I have seen a pair of valves of this species measuring two feet across, and weighing about five hundred pounds, used for a holy water font, in the Church of St. Sulpice, in Paris.

Another species, Mya truncata, much resembling our clam, excepting that the posterior end of the shell appears as if chopped off or truncated, is common from Cape Cod, northwards to the Arctic seas, but is not found south of the Cape.

To be Continued.

BRIEF NOTES ON THE LAND AND FRESH-WATER SHELLS OF MERCER CO., ILL.

BY WILLIAM A. MARSH.

(Continued.)

FAMILY CORBICULADÆ.

SPHÆRIUM AND PISIDIUM.

The family Corbiculadæ is divided into six genera, as follows: 1 Corbicula, Megerle; 2 Batissa, Gray; 3 Velorita, Gray; 4 Cyrena, Lamarck; 5 Sphærium, Scopoli; 6 Pisidium, Pfeiffer. Batissa and Velorita are not represented on this Continent. Only two genera are represented in Mercer County, viz: Sphærium and Pisidium, seven species being found of the former and three of the latter. The animal of Sphærium is oval, lobes of the mantle simple, united posteriorly, and terminating in two syphons joined at the base without tentacles, mouth oval, small tentacles of the mouth short and narrow. Gills rather broad, nearly equal, united behind the foot, which is narrow and elongated. The shell of Sphærium is oval, nearly equilateral, beaks somewhat prominent, hinge margin narrow, with two primary teeth in each valve, lateral teeth elongated, pallial impression simple, ligament external, narrow, and situated on the longer portion of the shell.

The species composing the genera, Sphærium and Pisidium are small bivalves found in all our creeks and in the Mississippi River, also in the numerous sloughs and small lakes of our county. Like our Unionidæ, some species are more active than others; some are abundant, while others are rare.

58.—Sphærium sulcatum, Lamarck.

This fine species, as found here, varies somewhat from typical forms. It is usually transversely oval, nearly equilateral, rounded anteriorly, pointed posteriorly, slightly curved at base, valves convex, beaks full, and raised above the outline of the shell, with coarse and regular sulcations. Epidermis dark chestnut brown, interior light blue, cardinal teeth small, double in both valves. I have found this species, which is rare here, in two or three localities in Pope and Edwards Creeks, and at the mouth of Edwards Creek in the Mississippi River, usually associated with *striatinum* and *transversum*.

59.—Sphærium solidulum, Prime.

Shell transversely inequilateral, elongated, sometimes slightly convex, sometimes compressed, beaks full, not prominent, anterior margin rounded, slightly angular posteriorly. Epidermis variable from dark brown to brownish yellow, sometimes greenish, interior dark blue, cardinal teeth double, lateral teeth large. This species somewhat resembles *sulcatum*, but is less elongated, less convex, more solid, with the sulcations rather coarser and more irregular. This shell is very rare here, as I have found it in but one locality, and that in Edwards Creek

60.—Sphærium striatinum, Lamarck.

Shell rather thin, transversely elongated, sometimes inflated and somewhat compressed, inequilateral, rather rounded anteriorly, distended posteriorly; beaks full but not much raised, sulcations variable, sometimes coarse, at times nearly smooth. Epidermis greenish yellow to light brown, shell blue within; cardinal teeth double and very small. This well-known species is found rather commonly in our creeks as well as in the river, and its sloughs and lakes. It is our most common *Sphærium*, and I find it very difficult to separate from *S. solidulum*. It is found here both in deep and shallow water, in both swift and quiet water, and in the mud as well as in the sand and gravel.

61.—Sphærium Jayanum, Prime.

Shell rhombic, nearly equilateral, convex, thin, anterior and posterior margins very abrupt, beaks central, calyculate, approximate at apex. Cardinal teeth distinct; lateral teeth long; shell blue within, striæ hardly visible. Epidermis light greenish horn color, often having a bright yellow band on the inferior margin.

A rare and beautiful species, found only in the river and its sloughs, and the small lakes of the Bay Island. It, in some respects, favors

S. *truncatum* and S. *partumium*. It differs from the former in being more inflated, more angular, less round, beaks less central; and from the latter in being more equilateral, much more abrupt on the anterior and posterior margins, more rounded at the base It is much larger, more elongated, and with a lighter colored epidermis. I find it usually associated with *striatinum* and *transversum*.

62.—Sphærium trancatum, Linsley.

Shell rhombic orbicular, lenticular, thin pellucid, slightly inflated, nearly equilateral, anterior margin rounded, posterior margin straight, beaks central, calyculate, and approximate at the apex, striæ very delicate. Epidermis light green to dark brown. Cardinal teeth small, lateral teeth slender.

I have never found this species in the vicinity of the river, but it formerly occurred quite abundantly in all the small ponds along Pope and Edwards Creeks. Three years ago, in the month of November, I collected over 2000 specimens of this shell in one small pond near Pope Creek, that had quite recently been drained, and the water all drawn off. This appears to be a very sluggish species, moving around but little, although it seems to like muddy situations. I never found it buried in the mud, nor have I ever seen the animal in motion.

63.—Sphærium occidentale, Prime.

Shell oval small, pellucid, fragile, equilateral; margins rounded; valves slight, sometimes convex, at times rather depressed; beaks full, rounded and raised slightly, sulcations very fine. Epidermis varying from yellowish to brownish horn color. Cardinal teeth small; lateral teeth larger. This species is probably very rare here. Five years ago I found about 20 species in a small pool of still water near Pope Creek, in Cabeen's timber, which is the only locality known to me.

64.—Sphærium transversum, Say.

Shell oblong, elongated, inequilateral, translucent, anterior margin rounded, posterior margin truncate; beaks prominent, calyculate; striæ very fine. Epidermis greenish yellow, often of a darker shade over the beaks. Cardinal teeth compressed; lateral teeth long.

This large and well-known species is commonly found in the river and in its lakes and sloughs; and it is also found in Edwards Creek. The young specimens are very fragile. The species has a geographical range from New York to Texas.

GENUS PISIDIUM, PFEIFFER

Animal elongate oval, compressed laterally; lobes of the mantle without tentacles, united posteriorly into a single, short syphonal tube; tentacles of the mouth triangular, elongated; gills of moderate size; foot small. The difference in the *shell* of Pisidium, and that of *Sphærium*, consists mainly in the position of the beaks, which, in *Pisidium*, are terminal, and in *Sphærium*, generally central, dividing the hinge margin into equal portions.

65.—Pisidium compressum, Prime.

Shell solid, oblique, trigonal, triangular, inflated; beaks small, but raised and distant, with a wing-shaped appendage on the summits; striæ distinct and regular. Epidermis variable, yellow-brown, sometimes chestnut color. Cardinal teeth small; lateral teeth short.

This is our most common species, and is found very abundantly in the sloughs, and in the small lakes of the Bay Island. The finest specimens are found in Sturgeon Bay, above New Boston, and in Swan Lake. During the Spring this species is very active, but in the Autumn it is seldom found. Owing to the peculiar wing appendages on its beaks, there is no difficulty in separating it from other species of this genus.

66.—Pisidium variabile, Prime.

Shell heavy, oblique, inequilateral, inflated, subtruncate; beaks situated posteriorly, full, prominent, not approximate at apex; valves solid; striæ regular and distinct. Epidermis varying from straw color to greenish brown, darker anteriorly than posteriorly. Cardinal teeth united, small; lateral teeth short and heavy. This species is by no means common

here. Some twenty specimens were found only, at the junction of the Lakey with the Hanneman Slough, near the Mississippi River, associated with *Pisidium compressum*, and three or four specimens were found in Sturgeon Bay, above New Boston.

67.—*Pisidium æquilaterale*, Prime.

Shell small, stout, heavy, somewhat inflated, rhomboidal, sub-equilateral; posterior margin a little angular; anterior margin rounded; beaks central, large, prominent, rounded, not approximate; valves solid and moderately convex; striæ fine; surface glossy. Epidermis variable, yellow, green, or brown. Cardinal teeth small; lateral teeth distinct. This species is very rare here, and I know of but one locality, a small pond near Pope Creek, where but a dozen specimens were found, associated with *Sphærium occidentale*.

To be Continued.

ON THE DISTRIBUTION OF LAND AND FRESH-WATER SHELLS IN THE TROPICS.

BY CHAS. T. SIMPSON.

(Continued.)

But, it may be asked, is it possible that fresh-water mollusks may be carried from one place to another across the sea on trees? I believe they may. Great numbers of trees are washed out and lodged along the rivers and torrents of tropical countries; and in the crevices of the bark of these trees many species of fresh-water shells find a home. Others live among the roots of living trees which are washed by the water of streams. In Florida I have collected handfuls of Unio fuscatus and other species among the matted roots of trees just under the surface of the water. Such trees, washed out and carried down stream, would take some of their molluscan inhabitants with them. Others, carried in floods, with broken, jagged limbs and loosened bark, would plow up quantities of mud and shells from the bottom and carry them out to sea. Some such trees might drift into bays at the mouths of rivers in other countries, and I have seen just such floating in the mouths of the Manatee and Caloosahatchee Rivers, in Florida. It must be remembered that all these rivers, during the rainy season, are only very slightly brackish, or even entirely fresh, throughout their estuary portions.

Trees carried into such places, and bearing fresh-water shells, might be driven up and landed by tide and winds, and a colony of living inhabitants established. Many of the shallow bays along the coast of Florida become perfectly fresh during the rainy season, as some five feet of water falls there in three months, and the same thing no doubt occurs in other parts of the tropics where the rain-fall is much greater. In Florida these bays at such times connect with ponds of water on the flat lands, so that often for miles the whole country from the shore far inland is nearly covered with fresh water.

At the south-western extremity of the State are found the Ten Thousand Islands, an innumerable group scattered over a space of a hundred and fifty miles of coast separated by brackish channels through which the tide flows in and out, gradually becoming entirely fresh in the region of the Everglades. So there would be no trouble about landing a colony of fresh water snails on the Florida coast, and the only difficulty would be in bringing them across could they stand the drying and the salt water of the ocean? Everyone who has ever observed fresh-water mollusca knows that many species will go for a long time without water. Physas, Planorbis, Limnæas, Paludinas as well as some of the Ampullarias, and many others dry up in mud at the bottom of ponds and streams, and lie dormant until the rains come. In a small drain in the woods near Braedentown, Fla., I found numbers of Unio hebes buried in nearly dry sand, which must have remained dormant for nearly nine months of the year, as water only ran in it during the rainy season. Some of these were taken out, and survived for months thrown out in the yard in the full sunshine, and without rain.

Many fresh-water species will live in brackish water, as is well known. Neritina reclivata, found in Florida, seems indifferent as to whether

it lives in fresh water or that which is more or less salty, and N. lineolata, and macrastoma, which I found in Honduras in the mouths of rivers often extended into the sea. Planorbis tumidus was often found in slightly brackish water in Florida, and the Limnæas in the Baltic, and some places on the British coasts mingle with the Littorinas.

Ampullaria caliginosa, a Mexican species, closely related to A depressa, if not identical with it. Planorbus tumidus, and Havanensis,* and a few other tropical species found to-day in the Southern States, may have been introduced, I think, in the manner of which I have spoken. Of course such voyages of living snails, with a successful termination, could only happen rarely, but it must be remembered that countless ages have elapsed since the present species have occupied the earth. Of the 180 species of trees found in the State of Florida, fully one-third are natives of the West Indies or the American tropics, besides great numbers of shrubs and herbaceous plants. Of her ten or a dozen palms, nearly all are West Indian. The Royal Palm is found in South Florida, and growing on it the Dendrophylax, Lindeni, a lovely orchis that I have seen on it in Utilla, both probably having made the voyage together, as I believe it grows on no other tree. If then a host of plants and trees from the tropics, among them a number of ferns and Epiphytal orchids of the tenderest character, and whose seeds would undoubtedly be destroyed by long contact with salt water, have drifted across and become established in Florida, I do not see why a few land and fresh water species of shells might not do the same thing; and I should not be surprised if future and more careful search in the almost impenetrable wilds of South Florida would bring to light a large number of West Indian Land and Fresh-water mollusks.

Certainly in this case it cannot be claimed that Florida has been connected with the Island of Cuba, the Bahamas, or any of the West Indies in recent times, as the State has been upheaved from the sea since the commencement of the tertiary epoch, and within the time of the present species has increased its area at the southern extremity by means of the corals.

*Identified by Mr H. A. Pilsby, who has made a special study of the genus Planorbis.

Nor do I think the theory is reasonable that many of these shells have passed around into Florida from Mexico by way of the southern shores of the Gulf States. Within a comparatively limited time the land near the mouth of the Mississippi has been deposited by that stream, filling up a shallow estuary that extended far up the valley into a region too cold for most of these species to have survived in; besides, most of these tropical shells are not found in this region to-day, but in the southernmost part of Florida. Neither is it probable that they were brought there through the agency of man, as Southern Florida is an almost uninhabited wilderness, and has been so since the commencement of its history. I have spoken in this article, of shells being introduced into Florida, because I am most familiar with it and its shell fauna, but numbers of similar instances could be given all over the tropics.

Ogallala, Neb., Aug. 8, 1887.

Concluded.

ON A NEW FLORIDIAN NATICA.

NATICA FORDIANA, N. S.

Shell small, conic globose, white and shining throughout; whorls well rounded, plicately striate below the suture, where they are encircled by about six faint lineal sulcations, giving the spire and upper part of the body whorl a slightly decussated appearance; suture well impressed, umbilicus open, bounded by a slight groove; columella only slightly callously thickened; operculum corneous. Length, 40 inches, diameter, 30 inches. Some twenty or more specimens of this fine little species were taken alive on sand flats in Sarasota Bay, Florida, by the writer, during a severe norther in a locality only laid bare by the heaviest storms. I had supposed it to be a form of *N. semisulcata*, Gray. This latter species is placed in the section *Stigmaulax* of the typical Naticas, a section with grooved whorls, but Mr. Tryon states that he had never seen the operculum of *N. semisulcata*, and thought that it might possibly be a *Mamma*. My friend, Mr. John Ford, of the Acad. Nat. Sciences of Philadelphia, hav-

ing carefully compared my shells with specimens of that species in the Collection of the Academy, informs me that it is not that, but that it is certainly a new species. I take great pleasure, therefore, in naming it in his honor. Its corneous operculum places it in the sub-genus *Neverita*, and the want of a funiculum makes it a member of the section *Lunatia*.

CHAS. T. SIMPSON.

Ogallala, Neb., Sept. 1, 1887.

STRIÆ.

Raton, New Mexico, owns a natural gas well.

There are 300 species of fossils in the famous steatite beds of Grundy Co., Ill.

A storm and tidal wave occurred at Guaymas and San Blas, Mexico, lately.

A Museum of Natural History is to be erected at Coronado Beach, Cal.

Parry's Marmot, *Spermophilus Parryi*, is said to live nine months under the snow.

The common robin, *Turdus migratorius*, was observed on the Mussel Creek, Idaho, 6000 feet above sea-level.

It is announced that Professor Palmer, of Harvard, is to marry President Freeman, of Wellesley College.

Ferns to the number of 129 species have been found on the Sandwich Islands, but 10 of which also inhabit North America.

A rare Western plant, *Wolfenia veniformis*, Hook, has been found as late as June 28th in full bloom, near the snow at an altitude of 6000 feet.

Rev. W. M. Beauchamp, of Baldwinsville, N. Y., lately read a paper of great merit upon Indian antiquities before the Pennsylvania Historical Society of Philadelphia.

The Biological Class of the University of Pennsylvania, lately working in the West Indies, has returned with a great quantity of material.

Emin Bey lately sent a large and valuable collection of Natural History specimens to the South Kensington Museum, London.

Geo. H. Taylor, of Mobile, Ala., is now at work on the muds of Beaufort harbor, N. C., in search of microscopical material.

A. H. Brecenfeld, Recording Secretary of the San Francisco Microscopical Society, has resigned, and has gone to San Diego.

Milan possesses an 800 pound quartz crystal, 3½ feet long, and 5½ feet in circumference.

The next meeting of the Amn. Ass'n. for the Advancement of Science, will be held at Cleveland, O. Professor E. S. Morse, of Salem, Mass., has retired from the Presidency.

Twenty-eight miles per hour, it is said, is the fastest time made by any boat, and that by an Italian twin-screw torpedo boat.

Senorita Matilda Montoya is the first Mexican woman to become a doctor. The proceeds of a bull-fight, originated by the young men of the City of Mexico, were devoted to the purchase of books and instruments for her.

A new variety of *Papilio rutulus*, and named by Mr. James Behrens, var. *Ammoni*, has been found in Nevada by Herr v. Ammon, of San Francisco, after whom it was named. Also a new *Catocala*, named by Mr. Behrens, *Catocala Elda*, n. sp., found at Portland, Oregon.—*Canadian Entomologist*, October.

Young Collectors' Corner.

Shell Collecting.

CHAS. T. SIMPSON.

It is the fashion, now-a-days, among the young, and some who are not so young, to

spend a great deal of time and some money in collecting old postage stamps, tin tags and the like. What benefit can result from such collecting I cannot possibly see, unless it be to keep the persons so engaged out of mischief Yet there are large collections of tin tags held at a high money valuation in this country, and we have an organization of stamp collectors with regular officers, who meet and transact business.

It seems to me that the time, money and energy spent in such occupations could be far more profitably employed in making collections of natural history specimens in any of the many interesting departments Even if the collector had no aim in view except obtaining the largest possible number of species, it seems to me scarcely probable that he could get together a large collection in any department of natural history, without at least beginning to feel some interest in the study of the branch in which he was collecting, and, at any rate, his specimens might fall into the hands of some one who would make such a study and be benefited by it.

But it seems to me that there are very many who fall far short of the highest aim in collecting shells. With many the idea seems only to be the obtaining of the greatest possible number of species, while others wish only to make a fine show; and hence, desire only exactly matched pairs or triplets of shells, perfectly alike in form, sculpture and coloring. No doubt a large collection is always desirable, or extra fine specimens, and certainly anyone is justified in making as attractive and showy a cabinet as possible. Yet I think the true student of Conchology has a higher aim in view than mere numbers or fancy specimens or sets.

My shells are a set of tools to enable me to learn something of the science of Conchology; to assist in studying out the relationships of species, genera and families; the variations of species and varieties; the questions of geographical distribution, and other kindred subjects. For this reason I had rather have two varieties of a species than the best matched pair in the world, as one is but a repetition of the other, and can teach nothing that the other does not, and to me a set of the different forms and colors of a species means much more than a hundred fine specimens which are all alike. Many persons in collecting utterly refuse to get or receive young shells, and yet I believe, where it is possible, they should be always obtained, especially where they vary much in appearance or form from the adults.

Many a hasty naturalist has given a name to the young of some well-known species, whereas, if he had only taken the trouble to collect a set of all ages, he might have saved the literature of science another synonym.

In collecting I believe it to be well to obtain every possible variety and variation; reversed forms, arrested growths, and monstrosities. Even worn shells are sometimes valuable, for there have been many species founded on such specimens, which, of course have to be relegated to the synonymy. I always, when I can do no better, collect odd valves, worn specimens, or even broken shells, as I can learn some things from such specimens that I cannot from the best descriptions or figures.

If one is fastidious about appearances, he can put these "black sheep" in an old cabinet somewhere by themselves, and my word for it, if he ever astonishes the scientific world with many discoveries, he will go to them for examination and comparison quite often.

Then let me say to young collectors, let your collecting go hand in hand with studying; carry your note-book wherever you go, on the seashore, by the streams, or in the forests; jot down carefully every fact connected with distribution, habits, place and position of the mollusca that you may find, and such jottings may afterwards prove of great value to yourself and others; preserve the operculum of every species having one, and keep up a constant comparison among your species. Comparison was the chief point in Prof. Agassiz's teaching, and no more successful teacher ever lived. With careful study, as well as collecting, there is not a person interested anywhere who cannot add something to science or make valuable discoveries.

Ogallala, Neb., Oct. 5, 1887.

NECROLOGY.

Joseph Wilson, M. D., U. S. N., died March 1st, 1887, aged 40 years. Dr. Wilson was connected with Perry's expedition to Japan, and was much interested in Natural History. He also made many contributions to the Cabinet of the Academy of Natural Sciences of Phila.

He was the author of a work entitled "Naval Hygiene," published in 1879, a book of much merit.

Dr. J. C. McCormick, Conchologist and Archæologist, of Strawberry Plains, Tenn., was killed on the 4th of Oct., 1887, by the collapse of an Indian mound which he was exploring.

VALVES.

About 300 species of cowry (*Cypræa*) are found in tropical and sub tropical seas.

Ovulum (*Volva*) *secale*, Sowerby, a native of the Bahamas, feeds upon the polyps of *Pterogorgia setosa*, Linn.

The type specimen of *Bulimus Rossiteri*, Brazier, New Caledonia, is deposited in the Cabinet of the Academy of Natural Sciences, Philadelphia.

Corrections:—Vol. 2, No. 3, page 38, 33d line from top, please read *coves* for caves; and on 27th line, 2d column, the word *renews* should be read instead of revives.

The British Government levies a tax of £2 or $10 upon each specimen of *Cypræa aurantium*, Mtn., obtained for export. This accounts for the high prices at which this fine shell is held.

Owing to the brittleness of *Phasianella bulimoides*, Lamarck, (a highly polished and very beautiful Australian shell related to *Trochus*), it is very difficult to obtain perfect specimens.

Mr. E. W. Roper, of Revere, Mass., upon a recent visit to Bethel, Me., reports that he found *Planogyra asteriscus*, (originally discovered there by Mr. Edward S. Morse, of Salem, Mass.), *Hyalina ferrea*, *exigua*, *chersina*, and *lineata*; *Vitrina*, *limpida*; *Carychium exiguum*; *Vertigo Gouldi*, and *simplex*; *Pupa pentodon* and others. He found all these shells in the same kind of localities as Mr. Morse described 25 years ago. At Portland, Me., he reports having found the minute *Skenea planorbis*, *Rissoa occulens* and *Purpura lapillus*.

The following extract from Prof. Keep's interesting "West Coast Shells," is a true index of the prevailing style: "At length I struck "upon a spot where a little stream of water was "oozing out from the bank of sand. As I "scraped away the surface, I saw something "which would have made me dance for joy "had I not been weighed down by the long "boots. For there, in very truth, was a live "Olive, (*Olivella biplicata*, Sby.), with its graceful shell shaped like Figure 20, and a beautiful pearl-colored body. It quickly withdrew "this into the shell and closed the aperture "with a very insignificant scale, which seemed "to be an apology for an operculum."

PUBLICATIONS RECEIVED.

1. General Rules of The Natural History Ass'n, of New South Wales. 2. Description of a new Bulimus from New Caledonia. 3. Description of a new species of Onchidium. 4. New species of Land and Fresh-water Mollusca from Maclay Coast and Triton Bay, New Guinea, collected by Baron Maclay. 5. Trochidæ and other genera of South Australia, with their synonyms. Part 1. Nos. 2 to 5, by John Brazier, F. L. S. We are indebted to Mr. Brazier for the above, and sincerely trust that his useful and valuable labors in Australia may be long continued and richly rewarded.

List of Sea and Fresh-water Shells from Frank J. Ford, Wichita, Kan. Catalogue of the Central Normal College for 1886–87, also Central Normal Post for May, June, and July, August, 1887; also, List of Land and Fresh-water Shells found in the vicinity of Danville, Hendricks Co., Ind., collected by G. Dallas Lind, M. D., and Chas. A. Hargrave. From Chas. A. Hargrave, Sec'y.

PALPI.

YULE-TIDE is near, and you will need friends like Messrs. Porter & Coates, or you will miss it, as their well-stocked book shelves conclusively prove. Mr. George R. Nell, a gentleman of long experience in the book trade, will fill all orders, either directly or by mail, to your entire satisfaction.

HAVE you seen "Fossil Ferns," or are you content with what the miner tells you of the beauties underground? A sight of those for sale by our friend, Mr. J. C. Carr, will make you sorry for past indifference.

ISN'T it about time to dust out that mysterious Christmas closet up stairs, to set a *new* combination for the lock, &c? You couldn't begin the hoard with a nicer, cleaner work than Professor Keep's "West Coast Shells." It is written in the conversational style, which young students like so well, and Harry or Madie, once the owner of it, will read it all the year round.

NOT a thousand miles from Detroit, Michigan, lives a collector who wrote us in cold blood the other day, that "he could do without the aid of THE CONCHOLOGISTS' EXCHANGE." A reference to our mail book shows that *he had received no sample copies for several months.* Comment is unnecessary.

WHERE the bees' hive, there work is brisk. Mr. James M. Southwick writes, he is so busy he can hardly turn around. *Verbum sat sapienti*

MR. JAMES SPENCER, of Halifax, England, has a full line of Natural History goods for the inspection of his American patrons. He makes a specialty of micro-preparations of Coal Plants.

SOME time since we thought we should have to stop selling our $1.00 Offers, as the profits were so close; but our friends insist upon another series, and we issue No. 7 in this number. No. 1 Exchange Box has met with much favor.

OUR friend, Prof. Berlin H. Wright, now of Penn Yan, N. Y., but after November 1st, of Lake Helen, Fla., has everything to please you from a beautiful shell to a home in that American Orange Free State —Florida.

THE neatest, smallest and most useful thing out, is the Return Request Letter Stamp, issued by The National Letter-Return Association, of Chicago, Ill. We will send you circular for stamp, and can supply you with 120 stamps for 30 cents, 600 for $1.00. Try them and keep your letters out of the Dead Letter Office. Address The Conchologists' Exchange.

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Terms to NON-SUBSCRIBERS, which must be cash with order, are as follows: Exchanges of 20 words, including address, 10 cents; for each additional 10 words the charge will be 5 cents. No exchange will be inserted for less than 10 cents.

Offered.—Unio Anodontoides, Lea; Helix Berlandieriana, Mor., Texasiana, Mor., thyroides, Say, leporina, Gould; and other Texan shells for offers in Shells. W. W. WESTGATE, Houston, Texas

Wanted.—South American land and fresh-water Shells. Offered.—Ceylonese, Indian and others Send list. MISS LINTER, Arragon Close, Twickenham, England.

Offered.—Knorr: Horens en Schelpen: Sowerby: Thesaurus, Monograph Veneridæ. Wanted.—Volumes of American Journal of Conchology, or other conchological books. M. M. SCHEPMAN, Rhoon, near Rotterdam, Holland.

Fine specimens of the fossil Leda truncata from the clays of the Champlain Period in Maine, for offers. CHAS. A. DAVIS, Prof. Nat. Science, Alma, Mich.

Wanted.—In perfect condition, with localities:—CYPRÆA aurantium, bivosa, exusta, Scotti, thersites, tessellata, physis, eglantina, fusco-dentata and umbilicata. MUREX, Saulæ, palma-rosæ and tenuispina. OLIVA, angulata, maura, Melchersi, porphyria, tenebrosa, tremulina. STROMBUS gutturatus, latissimus and melanostomus. VOLUTA, fulgetra, junonia, imperialis, magnifica, reticulata, Rossiniana and rare Asiatic, Australian, African and South American Bulimi, Helicidæ and Unionidæ, and conchological works of all kinds.

Offered.—50 species of Tertiary and other Fossils from Southern States and Europe, Woodward's Manual of the Mollusca 75 edition: Leidy's Memoir of the Extinct Sloth Tribe, N. A.; Lea's Syn. of Family of Naiades, '52 edition: Hays' Descrip. Inf. Max'y Bones of Mastodons, 10 plates: Agassiz and Gould's Comp. Physiology, Bohn's edition: Coultas, Prin. Botany, Cryptogamia: Lea's on a Fossil Saurian of the New Red Sandstone Formt'n; Lesquereux's Cretaceous Flora, 50 plates, Smith's Mis. Col. Vol. 4, Neuroptera, Vol. 6 Diptera and Coleoptera, 3 pp out, uncut, or any of the shells on my Price List which I may have in duplicate. Parties not having any of the shells wanted above, need not apply. W. D. AVERELL, Chestnut Hill, Phila.

Offered.—15 species Unios, including Aberti, purpuratus, Schoolcraftii, and subrostratus, 5 species Anodonta. Fossil Oyster Shells. Satisfaction guaranteed. Send list. FRANK J. FORD, Wichita, Kan.

Offered.—Cypræa helvola, erosa; Harpa ventricosa; Nassa reticulata, variabilis; Trochus cinerarius, exiguus; Gibbula Richardi; Patella Lusitanica; Phasianella Kochii. G. W. MICHAEL, Jr., Morro, Cal.

Wanted.—Achatinella, Goniobasis and Sphærium. Offered.—Land, fresh-water and marine Mollusca. H. P. Smith, Custodian Cincinnati Society of Natural History, 108 Broadway, Cincinnati, Ohio.

Offered.—Land and fresh-water shells, bird skins, fossils, &c., for minerals. Prof. A. TODD, Elk Head, Oregon.

Offered.—Geodes, Minerals and Sea-shells, for U. S. Stamps. C. O. HENBEST, Marshall, Ill.

Sea-shells, Coral and other marine curiosities to exchange for offers in Natural History specimens. S. H. WITHERSPOON, Pulpit Harbor, Maine.

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Coins, stamps, anthracite fossils, etc., for land and fresh-water shells. W. V. LEHMAN, Box 100, Tremont, Pa.

Offered.—Books, papers, etc., for sea-shells and other marine specimens. Mrs. L. ABBOTT, Ravenswood, Ill.

Offered.—Fine Florida Shells and Curios for Naturalists' Books, Tools or Microscopes. CHAS. S. McPHERSON, Bonifacio, Florida.

Offered.—Indian Papoose holder, Doll, Red-stone Pipe-bowl, Bow and Arrows, Buck-skin Tobacco Pouch, Moccasins, Land, Fresh-water and Marine Shells, Holy Land Relics and many miscellaneous curiosities. Wanted.—Land, Fresh-water and Marine Shells, Relics and Curiosities. THOS. E. ADDY, 54 N. Franklin St., Janesville, Wis.

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MISCELLANEOUS.

Random Notes on Natural History. This journal, now out of print, is rapidly becoming scarce. We offer the back numbers containing the previous chapters of Mr. H. F. Carpenter's very instructive article upon "The Shell Bearing Mollusca of Rhode Island," Mr. John Ritchie, Jr.'s

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Chestnut Hill, Philadelphia, Pa.

The Conchologists' Exchange.

VOL. II. CHESTNUT HILL, PHILADELPHIA, PA., NOVEMBER, 1887. No. 5.

A Monthly Publication designed for Conchologists and Scientists generally. Wm. D. Averell, Editor and Publisher.

THE SHELL-BEARING MOLLUSCA OF RHODE ISLAND.

BY HORACE F. CARPENTER.

Chapter XLI.

FAMILY CORBULIDÆ.

This family contains seven genera of shells with more than one hundred species. Two of these genera are represented in New England, each by a single species.

Genus Corbula, Brug.—1792.

The Corbulas or Basket-shells have one valve smaller than the other; the animals have a foot shaped like a finger, adapted to poke in the sand and mud. The shells are shaped like very young Mya's, but do not gape like them. There are seventy-three recognized species, one of which inhabits Rhode Island.

150.—Corbula contracta, Say.

Shell small, ovate-globose, white (covered with smooth, rounded, elevated, concentric lines,) shortest and rounded before, narrowed and pointed a little behind; basal margin concontracted and arched in the middle; hinge with one slender, upright tooth in each valve, fitting into a corresponding pit in the other; beaks prominent, inclined forwards; an angular ridge runs from the beaks to the posterior end defining a broad rhomboidal space: left valve smaller than the right. Length, two-fifths of an inch; height, one-quarter; breadth, one-fifth.

This species was described by Thomas Say, Journ. Acad. Nat. Sci., Phila., ii, 312, 1822. Inhabits from Cape Cod to Florida. It is said to be very abundant in some places near low water in sand and mud. Perkins says he has dug it up alive from sand at low water near Savin Rock, New Haven, Conn. Verrill finds it in Vineyard Sound and Buzzard's Bay in five to nineteen fathoms. Gould says it is abundant about Rhode Island, but I have not been fortunate enough to discover any of these large deposits; one living specimen obtained in dredging in the bay and two dead ones on shore is all that have rewarded my labors thus far.

These shells might easily be mistaken for very young clams, but a close examination will disclose a very important feature, the right valve being larger than the left, the smaller valve shuts into the larger one when the shell is closed. I believe no other New England shell exhibits this peculiarity.

Genus Neæra, Gray—1834.

These beautiful shells are shaped like Corbulas, but are provided with a produced rostrum or snout at the posterior end, to shelter the delicate fringed syphons of the animal. The shells are thin and pearly, and are found only in deep water. There are twenty-two species, one of which inhabits New England.

151.—Neæra pellucida, Stimp, 1854.

Shell small, thin, sub-ovate, expanded before and contracted behind into a short snout; beaks small, placed a little in front of the middle; surface pale white, smooth with faint striæ of growth, quite distinct on the rostrum, interior smooth and glossy; teeth minute; epidermis white, sometimes pale greenish on the beaks

and brownish on the rostrum. Length, one-half an inch; height, three tenths, breadth, one-fifth.

This, the first and only species of this genus found on the Atlantic coast of North America, is accredited to New Brunswick in Conrad's "Catalogue of the Family Anatinidæ." "New England, northwards," Tryon's Am. Mar. Conch. 141. in Family Myidæ. Now placed in Family Corbulidæ. It was described by Wm Stimpson, in a pamphlet entitled "The Invertebrata of Grand Manan" in 1854. A specimen was taken from a haddock caught near Portland, Me. Another specimen was brought up by the dredge, off Long Island, from forty fathoms of water, in mud.

FAMILY ANATINIDÆ. D'Orb., 1845.

This is an immense family, containing thirteen living and twenty-six fossil genera. There are about 140 species living and over 400 fossil. There are five genera represented in New England.

Genus Pandora, Brug.—1792.

Shell inequivalve, thin, pearly within; right valve flat; left valve convex; syphons of the animal short, united, separated only at the tips.

152.—Pandora trilineata, Say, 1822.

Syns:

Pandora nasuta. Sby. Clidiophora trilineata, Carp., 1864.

Shell oblong-ovate, pearly white, rounded before and with an ascending or recurved tip behind; valves nearly flat, the left valve a little convex and the right one flat, leaving so little space that a novice would hardly believe that an animal could live between them; hinge placed at the posterior slope, which is very abrupt, and forms an obtuse angle with the hinge margin; hinge margin bounded on the edges by two rounded, elevated lines originating at the beaks and continued to the tip; there is also another faintly impressed line running across the valve from the beak to the middle of the base; on account of the presence of these three lines, Say gave it its specific name; Sowerby also named it nasuta, from its tip which resembles an upturned nose. There are three teeth in the left or convex valve and two in the right or flat one; interior iridescent. Length, one and three-tenth inches; height, seven-tenths; breadth, one sixth.

A single valve of one of these shells was found by Say in Great Egg Harbor, N. J.; he afterwards found specimens in Georgia and Florida, and described them in the Journ Acad. Nat. Sci, Phila., II: 261, 1822. It has been found as far North as Eastport and Grand Manan. Common in Buzzard's Bay, Long Island Sound, etc. Gould says: "Found about the *sandy* regions of Cape Cod, and not unfrequently discovered adhering to oysters in the market." We certainly have as good opportunities for examining oyster shells in Providence as in any section of the country, but I have never been able to find one of these shells adhering to an oyster, nor have any specimens been discovered on any of our *sandy* shores in Narragansett Bay. The only place where we find it is off Rumstick, at the mouth of Warren river, in fifteen to twenty fathoms water; the bottom here is soft mud, being the debris brought down by the Warren and Barrington rivers and deposited along the bottom of the Bay for half a mile or more from its mouth. In this fine mud live several species of shells not found except in similar situations.

Genus Thracia, Leach—1824.

There are twenty-seven species of this genus, two of which may inhabit Rhode Island.

153.—Thracia Conradi, Couthouy, 1838.

Shell rounded-ovate, thin, light and fragile, posterior end narrow and truncated; beaks nearly central, very conspicuous, that of the right valve perforated to receive the point of the other; exterior ashy white with a thin brownish epidermis not covering the whole surface; surface rough, coarsely wrinkled by the lines of growth, underneath it is pearly; interior chalky-white; valves toothless, held together by the strong external ligament; right valve large and more convex that the left. Length, three to four inches; height, two and a half; breadth, one and a half.

This species was described by Couthouy in the Jour. Bost. Soc. Nat. Hist. II: 183, 1839. It is said to inhabit the whole New England coast. It is thrown up in storms on Chelsea Beach, containing the living animal. Gould says: "Single valves are found on R. I." I have never seen one in our bay. A shell of this size, growing sometimes to four inches in length, would not be easily overlooked; it is shaped much like a quahog, but its narrowed and truncated posterior would at once distinguish it, without looking for the minor differences, such as the convexity of one valve, the toothless hinge, etc. Verrill says: "This species burrows so deeply in the mud or sand that it is seldom taken alive with the dredge."

154.—Thracia truncata, Mighels and Adams.

Shell small, ovate-triangular, compressed' white, solid, beaks at the posterior fourth' small, the right one excavated to receive the left; surface covered with lines of growth; epidermis pale yellowish; interior white; ligament large. Length, three-quarters; height, one-half; breadth, three-tenths of an inch. Described by Mighels and Adams in the Journ. Bost. Soc. Nat. Hist. IV: 38, 1842. A deep water species not yet found in Rhode Island. Agassiz dredged it off Martha's Vineyard. Inhabits from Long Island to Greenland.

To be Continued.

DESCRIPTION OF NORTH AMERICAN SHELLS.

BY C. F. ANCEY.

1.—*Helix Verrilli*, Anc.

Testa utrinque convexa, depressiuscula, nitidula, sat minute umbilicata, subopalino-albida, subhyalina, in medio ultimi zona angusta fusca cincta. Spira depresso-convexa, summo obtuso, nitido, lœvigato, Anfractus fere 4½, modice et regulariter accrescentes, convexi, sutura impressa linearique divisi, supra (apice excepto) granis breviter piligeris regulariter in quincunciis dispositis infra evanidis praediti: embryonali magno, haud papillatim producto, subtus regulariter convexo, nitido (striis incrementi vix perspicuis sculpto), ad aperturam leviter paulatimque antice descendente. Apertura sub-obliqua, emarginato-circularis, ad Casin prope columellam obscure subangulata. Peristoma tenuiter expansum, ad columellam latius reflexum, album, umbilicum profundum ex parte subobtectans.

Diam. maj., :17½; min., :15¼; alt., 11⅔ mill.

Locality: Ventanas, Durango, N. W. Mexico.

This beautiful shell, named after Prof. Verrill, belongs to subg. Leptarionta, Crosse. It was collected by M. Forier and identified by Prof. Mousson as *H. Remondi*, Tryon, from which it widely differs. Indeed, they do not seem to belong to the same group, as Verrilli is quite distinct in shape, color, texture, number of whorls, etc. It also differs much from another species, which has been erroneously reported from Arizona, and subsequently found in Lower California by M. W. H. Gabb, and also more recently in the same peninsula by a French engineer, Mr. Cumenge, associated there with Leptobyrsus spirifer, Gabb, a much more common shell, at El Boleo on the coast opposite to Guaymas, in Sonora, viz: Helix *Rowelli*, Newcomb, in having a much smaller umbilicus, less depressed shell, higher body whorl, and the upper whorl not abruptly elevated above the level of the spire.

2.—*Helix Levettei*, Bland.

Triodopsis Levettei, Bland in Ann. Sc. Ac. N. Y. ii, p. 115 (1880).

The type was found in Santa Fe Canyon, New Mexico; the species has been subsequently reported by Mr. W. G. Binney as found in the Huachuca Mountains, near Tucson, Arizona, (vide: Bulletin of the Museum of Comp. Zool., Cambridge, Dec., 1886, p. 36, pl. 1, fig. 15). The specimen figured in the last said publication differs from the type as represented in the "Manual of American Land Shells," 1885 (p. 385, fig. 418), in having a slightly

broader posterior and a single bifid tooth (instead of two distinct ones) on the basal edge of its peristome.

I received the following forms—which appear to deserve a name as varieties—from Prof. J. H. Thomson. They are as the type from Santa Fe Canyon, New Mexico. I was informed the locality where they were found is now destroyed, being use as a "rancho" for the cattle.

Var. *Thomsoniana*. Differt statura minore, numero anfractuum (5½ nec 7), testa vix striatula, peristomate plerumque dilutiore, ultimo anfractu magis ad finem descendente et dente basali uno *vix* bifido.

Var. *orobana*. Peraffinis precedenti; numero anfractuum et statura persimilis; sed discrepat ultimo anfractu vix descendente ad terminationem, altiore; apertura majore et minus obliqua.

3.—Helix armigera, Anc.

I avail myself of the opportunity I have now of writing about some of the American snails, to declare I consider now as distinct the form I had formerly described under the name of H. Columbiana var (?) armigera (var. armigera, err typ., in "le Naturaliste"). It was formerly refered by Mr. W. G. Binney (in Manual of American Land Shells, 1885, p. 474) to Stenotrema germanum and thought by this conchologist to be a variety major of the last, connecting this species with Mesodon Columbianus. Subsequently (December, 1886) he figured this form as Mesodon armigerus and expressed his opinion that it would be doubtless considered eventually as a distinct species. It appears to me to be distinct from both shells, either Stenotrema germanum or Mesodon Columbianus that Mr. Binney regarded in his last work as more close to it than S. germanum.

4.—Microphysa Ingersolli, Bland.

Helix Ingersolli, Bland, in Ann. Lyc. N. H. N. York, xi, 151, fig. (1874): W. G. Binney, in Man. Am. Land Shells, 1885, p. 170, etc.

Var. *convexior*, Anc.

Testa paulo minor; spira haud planulata nec apice subimmersa, distincte convexa. Anfractus modo 5 nec 5½, regulariter sed minus lente accrescentes. Umbilicus minor.

Logan Canyon, Utah (Hemphill).

This form differs very much from the type as figured by authors, and may perhaps in future prove to be a different species; if so, the name of *convexior* should be specific.

5.—Patula strigosa, Gould.

Helix strigosa, Gould, in Proc. Bost. Soc. N. H., ii, 166 (1846).

Var. Bruneri, Ancey (Helix (Anguispira) Bruneri, Ancey in Le Naturaliste, III, p. 468, 1881).

This shell (Bruneri) does not seem to me identical with the form Oquirrhensis, Hemphill MSS. (Binney in Bull. Comp. Zool., 1886, p. 34, pl. II, fig. 12), as suggested by Mr. Binney himself. It is much more flattened and the umbilicus is wider. The spiral ribs are also more obsolete and interrupted. At any rate, my name, published in 1882, should have the priority on that of Oquirrhensis, a MSS. name, published only last year.

A number of the forms Binney regards as mere varieties of Patula strigosa, I look on as distinct species; such are: Wasatchensis, Haydeni, Oquirrhensis, Hemphilli, Bruneri, Utahensis, peripherica (Ancey 1882—multicostata, Hemphill MSS., Binney, 1886), castanea, Gouldi, etc. The limit between what are universally considered as distinct species at the present time, is quite impossible to determine, should all these shells be regarded as mere local variations of a single species. In Europe H. strigosa should be the head of a very protean group of *species*. In the fact, most of the so-called varieties are confined to very restricted areas, which may eventually confirm the opinion I expressed here.

To be Continued.

BRIEF NOTES ON THE LAND AND FRESH-WATER SHELLS OF MERCER CO., ILL.

BY WILLIAM A. MARSH.

(Continued.)

FAMILY VIVIPARIDÆ.

This family is represented in Mercer County by three genera, viz: Vivipara, Lamarck, three species; Campeloma, Ratinesque, three species; and Lioplax, Troschel, one species.

GENUS VIVIPARA, LAMARCK.

68.— Vivipara intertexta, Say.

Shell sub-globose, yellowish-green, olivaceous or dark brown, with many minute, obsolete revolving lines; spire depressed, conic, obtuse, truncated; whorls five; suture deeply indented; umbilicus only partially closed by the lateral extension of the columella; sometimes ornamented with two or three plain bands, although usually without band. This fine shell is rather common in all the sloughs near the river, and in the small lakes of the Bay Island. It was the opinion of some of our early conchologists that this species was only found in deep water, but my experience teaches me differently. I find very fine live specimens in very shallow water, especially during certain seasons of the year, when this species is most active. In the Myers Slough I have collected many fine specimens in clear water not three inches in depth. It is found rather rarely in the river proper, but I occasionally find it under flat stones, associated with *V. subpurpurea*. There are two varieties here; the dark brown, and the light colored having a yellowish-green epidermis and usually ornamented with pale, rather obsolete bands. The last named variety is smaller in size. Often during sudden rises in the waters many specimens of this shell may be found clinging to the underside of pieces of bark, chips, or small sticks of wood floating near the margins of the sloughs and lakes.

69.— Vivipara subpurpurea, Say.

Shell oblong, sub-globular, oval, thick and solid when adult; whorls five; sometimes wrinkled, often smooth and shining; spire slightly elongated; suture impressed; epidermis variable, olivaceous, pale horn, yellowish-green, and sometimes with a purple tinge, often ornamented with from three to five pale purple bands on the body whorl; aperture widest in the middle; interior of shell varying from pearly white to reddish purple; umbilicus in some specimens entirely closed, and in others only partially closed.

The young and half-grown of this species differ so much from the adult that it is very difficult to describe. As found here in the river it is variable, and during different stages of growth might easily be mistaken for more than one species. It is rather rare here, only being found in the Mississippi river. The time to collect it is when the water is very low, when it is generally found attached to the under surface of flat rocks, and sometimes under logs that have lain a long time under water. I have never found it upon muddy bottoms, and it must be sought for where the current is usually rather strong, with plenty of sand, gravel and rocks at the bottom. Near the mouth of Edwards Creek, in the Mississippi, is the only locality in which I have found this shell in any numbers. It is likely that *V. subpurpurea* and *V. intertexta* are found the whole length of the Mississippi from Minnesota to Louisiana.

70.— Vivipara contectoides, W. G. Binney.

Shell elongate-ovate, rather thin, smooth, shining, growth lines delicate, greenish horn color to light brown, with longitudinal dark lines marking the former peristome and ornamented with four well defined brown bands revolving around the body-whorls, only partially umbilicated; apex, usually entire; whorls, five, bulging, increasing very rapidly in length, last whorl ventricose. Aperture sub-circular, oblique, white within, showing the bands plainly, which do not reach the edge of the aperture; peristome dark, thin, sometimes shining, somewhat reflected at the umbilicus. Found only in the Cowan and Bention Sloughs, below Neithsburg. This, our largest *Vivipara*, often attains a large size. Remarkably fine specimens of this shell

have been collected by my son. Philip Marsh, in the Illinois River, in Peoria Lake and in the river at Beardstown, Cass county. I have never found this species in the river, only in the sloughs near it, and it must be extremely rare as but a few dozen specimens have been obtained. Specimens of *Vivipara* from Europe labled *V. Listeri*, *V. Hungarae*, *V. vivipara* and *V. contecta* appear to me to be very closely allied to it.

GENUS CAMPELOMA, RAFINESQUE.

71.—Campeloma subsolida, Anthony.

Shell ovate, imperforate, spire elongated, very thick and heavy; sutures very distinct; whorls, from 6 to 7, sometimes rather flat, at times rounded and inflated. Epidermis light green to light brown when adult; aperture broad, ovate rounded before, angulated posteriorly, white within; peristome continuous with heavy callous over parietal wall; margined with black epidermal tissue lines of growth very prominent. This fine species is very abundant in the river and along the margins of our sloughs and lakes, always preferring muddy or very fine sandy bottom, and it is also found in all the small creeks of the county. In the sloughs it attains a large size, but it is very much smaller in the creeks. Where there is less lime and more iron ore, the creek specimens besides being much smaller, usually have a darker epidermis. Sometimes the river forms are mallеate; and it is not unusual to find specimens with a reversed spire; and again, I have found that heterostrophic specimens average about one in every 200 collected. The animal of *Campeloma* seems to be effected by extreme heat and cold, and I have found vast numbers of dead specimens in the sloughs when, during the Summer, the water is very low and highly heated. The animal of this species usually begins to disappear by the middle of September, and buries itself deeply in the mud, where it hibernates until early Spring.

72.—Campeloma exilis, Anthony.

Shell turreted, smooth, thick; color light green; spire elevated; whorls from 6 to 7; sutures well marked; aperture small, broad-ovate, livid within, sometimes white; umbilicus variable, either open or closed; whorls variable, either angular or flat; growth lines distinct. This species is regarded by many as identical with *C. coarctata*, Lam., while others claim it to be a sexual counterpart of *C. subsolida*, Anth. It is found here in but one locality, Sturgeon Bay, at the lower point of Bay Island, where it seems to be rather common. It is quite variable, as some specimens are found with a distinct pale revolving band encircling all the whorls, while many others have the whorls very much angulated; and again, others are found with very flat whorls.

73.—Campeloma rufa, Haldeman.

Shell imperforate, elongately ovate, thick, rather smooth, often polished and shining; growth lines sometimes rough; body-whorl often malleated; epidermis dark olive, shading to green; location of former peristomes distinctly marked by dark brown or black sigmoid streaks, reddish under the epidermis; whorls 5 to 7, pinkish to the apex; slopingly convex, near the suture sometimes slightly angulated; aperture slightly oblique, ovate, reddish within. This shell is rare here, only a few specimens having been found in two localities, viz: at the point of a small island at the junction of Lakey and Hanneman Sloughs, and near the outlet of Swan Lake, on the Bay Island. The few specimens obtained are, however, very much nearer typical than the majority of specimens in my cabinet from other localities, the rufous or reddish appearance of the epidermis, and the pinkish color of the entire apex in all stages of its growth, will readily distinguish this species from all others.

GENUS LIOPLAX, TROSCHEL.

74.—Lioplax subcarinata, Say.

Shell varying from broad-oval to subcylindrical in form, thickness variable; color of epidermis ranging from light olive to light green, often shining; smooth, imperforate; whorls from 5 to 6, body-whorls rounded, sometimes subcarinate, remaining whorls carinate or subcarinate, reticulated with striæ and wrinkles; sutures deeply impressed; whorls often entire

and carinate to apex; aperture oval and half the length of the shell.

This fine shell is very common in all our river sloughs and small lakes, and is sometimes found in the river. It is a variable shell in respect to outline and the carination of its whorls. Sometimes all its whorls are carinate; again, the body-whorl is perfectly rounded. It is also equally variable in regard to thickness, as often the body-whorl is very finely reticulated with revolving striæ, and at other times devoid of them. The habits of the animal seem to be very similar to those of *Campeloma*.

To be Continued

NOTES UPON THE UNIONIDÆ OF SOUTHERN FLORIDA.

BY DR. S. HART WRIGHT AND BERLIN H. WRIGHT.

We have collected extensively of Uniones in the upper St. John's River region during the past three years, and have satisfied ourselves concerning certain points. Now we will give to the readers of THE CONCHOLOGISTS' EXCHANGE the results.

Unio Anthonyi, Lea.

This shell is found in the St John's River, in the vicinity of Blue Springs Landing, about 175 miles south of Jacksonville. It is not a plentiful shell, but may always be recognized by its flattened sides and plicated posterior slope. It properly belongs to the plicate group, as Dr. Lea suspected.

Unio aheneus, Lea.

We found this shell in but one locality, viz: Lake Ashby, Volusia County. Mr. J. B. Upson has collected it in a small creek which flows into the St. John's River, near Palatka. The form in Lake Ashby is not typical, but is heavier, has a more arched dorsal line and heavier teeth, and the hinge line is shorter. The figure given by Dr. Lea is of a young shell.

Unio amygdalum, Lea.

This species is found in Lake Dias, Volusia County, also in Lake Monroe, Lake Beresford, and in the St John's River, at Blue Springs Landing. We have a great many forms which we have doubtfully referred to this species Possibly further research will result in finding some new species of this general form. The forms found run into *Unio trosulus*, Lea and *lepidus*, Gould.

Unio angustatus, Lea.

This shell has been collected in Black Creek, near Palatka, by Mr. J. B. Upson The specimens are very characteristic.

Unio arctatus, Conrad.

This species may be credited to Southern Florida with a doubt. Some of our best conchologists have pronounced a shell which we think a variety of *U. aheneus*, Lea, to be this species. Possibly we are mistaken. All of the shells which we have seen, while bearing the general outline of *U. arctatus*, Conrad, are too much inflated, and have a rougher epidermis and different nacre.

To be Continued.

THE GIBRALTAR AND TANGIER FORMS OF PARMACELLA.

BY T. D. A. COCKERELL.

In the "Journal of Conchology," for 1886, I described some spirit-preserved specimens of *Parmacella* from Gibraltar, and pointed out the characters wherein they differed from the most nearly-allied species, the *P. Valenciennii* of Webb and Van Beneden. Since then I have received living examples from Tangier, on the opposite African coast, differing in no respect from the Gibraltar forms, and a careful examination of them has led me to consider them rather as varieties of *P. Valenciennii* than a distinct species, particularly as the form found by Hidalgo in the central part of the peninsula

appears to be intermediate between the Gibraltar forms and the type. I, therefore, propose to classify the forms of *P. Valenciennii* as follows:

Parmacella Valenciennii, W. and Van B., *a. typica.*—Reddish brown without markings. This appears to be identical with *P. Moquini*, Bourg. (Palad.)

P. Valenciennii, b. punctulata. — Reddish-brown, mantle with small black spots. This is Hidalgo's form, of which he gives an accurate colored figure.

P. Valenciennii, c. maculata.—Ground color, inclining more to orange; mantle, with black spots and two black stripes converging toward its posterior end. Gibraltar and Tangier. This is the *P. Valenciennii*, Crosse, and the *P. calyculata*, Kobelt. I have shown ("Journ. Conch.") that Sowerby's *P. calyculata* differs from this in the character of the shell.

P. Valenciennii d. olivacea.—Similar to *var. maculata*, but ground color dark olive, rather lighter and somewhat mottled in young individuals. Gibraltar and Tangier.

CORRESPONDENCE.

Editor THE CONCHOLOGISTS' EXCHANGE:

Sir:—Thinking it might be of interest to the readers of THE CONCHOLOGISTS' EXCHANGE, I give you herewith the results of one hour and fifteen minutes' collecting at a point on the coast of San Luis, Obispo County, six miles from Morro.

Stenoradsia Magdalensis, Rve..	42	specimens
Ischnochiton Cooperi, Cpr.,	17	"
Tonicella lineata, Wood,	1	"
Mopalia lignosa, Gld.,	1	"
Crepidula navacelloides, Nutt.,	23	"
Crepidula adunca, Sby.,	28	"
Fissurella volcano, Rve,	1	"
Haliotis rufescens, Swains. (young)	2	"
Chlorostoma brunneum, Phil.,	numerous	"
Chlorostoma funebrale, Adams,	numerous	"
Amphissa corrugata, Rve,	6	specimens
Drillia mœsta, Cpr.,	2	"
Scalaria Hindsii, Cpr.,	2	"
Leptonyx hacula, Cpr.,	2	"
Ocinebra lurida, Midd.,	2	specimens
" *interfossa*, Cpr.,	4	"
" *circumtexta*, Strus.,	72	"
"	6	"
Calliostoma costatum, Mart.,	3	"
Acmœa asmi, Midd.,	1	"

They were all live specimens. I could have filled a bushel measure with *C. funebrale* and *C. brunneum*. I collected *C. brunneum* for the *Crepidula adunca* on them and for their large size I almost invariably find *Crepidula adunca* on *Chlorostoma brunneum*, and *Acmœa asmi* on *Chlorostoma funebrale*. I carried the 90 Chitons home in the gallon milk can (mentioned in a former letter) and only threw away *two* that curled up and could not be straightened.

G. W. MICHAEL, JR.

Morro, Cal., Oct. 23, 1887.

Editor THE CONCHOLOGISTS' EXCHANGE:

Sir:—Mr. J. W. Taylor has described and figured ("Journal of Conchology," 1885, p. 351) a new species of *Planorbis* from Manitoba, which he proposed to call *P. umbilicatus*, Taylor. The name has, however, been long preoccupied by Muller for a European species, which Jeffreys, and not English authors, have erroneously called *P. complanatus*, Linn., Linne's *complanatus* being more probably the species in England known as *nitidus*, and certainly not Muller's *umbilicatus*.

I therefore propose to call *P. umbilicatus*, Taylor (non Mull.) which is allied to *P. parvus*, Say., by the name *Planorbis umbilicatellus*.

T. D. A. COCKERELL.

West Cliff, Col., Oct. 27, 1887.

STRIÆ.

Herr Palisa, of Vienna, discovered a new planet, September 21st. It is Asteroid, No. 269.

G. W. Drum, of San Francisco, a collector 74 years of age, has just returned from New

Mexico and Western Texas with 3000 specimens of insects, collected after many miraculous escapes from the Apaches.

"Granny," the sixty year old sea anemone of the Edinburgh Botanical Gardens, has just died. It was collected in 1828 by Sir John Dalzell, at St. Abbs Head, on the Berwick Coast.

An expedition under the auspices of the Smithsonian Institution, and under the charge of Professor Frank Cushman, has been very successful in the Salt River Valley, in Southern Arizona. The remains of an ancient city were found, and it was clearly proven that the former inhabitants were equal in intelligence to the Aztecs.

Dr. Schliemann has willed all his archæological collections to the Berlin Ethnological Museum.

Philip Hoffman, a German clergyman and naturalist, claims in his autobiography in Strieder's *Gehehrten-Lexicon*, that he discovered the art of photography in 1833, six years before Daguerre.

Professor O. H. Drake, of the Maine Central Institute, has been offered the chair of Greek in Hillsdale College, Mich.

Professor Julius Wilhelm Ewald, the noted German mineralogist, recently celebrated at Berlin the 50th anniversary of his doctorate.

Miss Helen A. Shafer, a graduate of Oberlin, (where she obtained the Master's Degree), has been selected as President of Wellesley College.

It is said that the largest and most powerful electric light in the world is possessed by the light-house at Sydney, Australia. It is of 180,000 candle power, and may be seen for 50 miles.

A Mr. Coplen, of Latah, Washington Territory, has lately discovered, at a spring near that place, the pre-historic remains of no less than nine elephants, a cave bear, hyenas, extinct birds and a sea turtle.

The *Claytonia caroliniana* has been found in the West at an altitude of 6000 feet, in full bloom, and not more than an inch high.

The Baylor University of Waco, Texas, has just opened its elegant new building.

PUBLICATIONS RECEIVED.

Reports, Catalogues, &c. Catalogue and Circular of the California State Normal School, San José. Report of the Department of Natural History of the North-Western University, from Oliver Marcy, LL. D., Curator of the Museum. West Coast Pulmonata, Fossil and Living, By J. G. Cooper, M. D.

The Collector, Pittsburgh, Pa. The Educational Review, St. John, N. B. The Youth's Leisure Hour, Boonville, N. Y. The Agent's World, Passumpsic, Vt. The Yankee Trader, Marietta, Ohio. Southern Californian, Lugonia, Cal. The Ottawa Globe, Ottawa, Ill.

VALVES.

The shells from the Paumotu Isles in the Pacific are noted for their dwarfed size.

Mr. C. F. Ancey, of Berrouaghia, Algeria, has lately been honored again by having a foreign *Unio* named after him.

Mr. Theo. D. A. Cockerell, of West Cliff, Col., found several species apparently new to Colorado, belonging to the genera, *Pisidium*, *Sphærium*, *Ancylus*, *Pupa* and *Hyalina*.

The Editor of The Conchologists' Exchange has been honored by Professor Berlin H. Wright, who lately named a Unio found by him in Lake Ashby, Florida, *Unio Averellii*.

Various species of *Ostrea*, *Perna* and *Meleagrina* were found on pumice stone at sea, near Mauritius in 1886, and it is supposed that the floating debris was the result of the eruption of Krakatoa, which occurred in 1883.

Mr. Andrew Garrett, the noted Polynesian Conchologist, found *Melania Mauiensis*, Lea, (habitat of type, Sandwich Islands), at Tahiti, but not on any other island of the group. He also obtained it at Guam and in the Philippines, and received it from the New Hebrides, and regards it as probably identical with *M. granifera* and *scopulus*.

The Conchologists' Exchange.

A Publication designed for Conchologists and Scientists generally.

ISSUED MONTHLY

BY

WM. D. AVERELL,

EDITOR AND PUBLISHER

☞ Correspondence upon Conchology, as well as reliable items of interest concerning the Mollusca, their habits, localities, etc., kindly solicited from all. Matter for publication must be received by the tenth of each month.

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SUBSCRIPTIONS TO VOLUME II ARE NOW DUE. FOR EXPIRATION OF SUBSCRIPTION SEE DATE ON WRAPPER.

Editorial Notes.

WE hail the advent of Volapuk from *vola* of the world; and *puk*, language, the new scientific international language. By means of this most useful medium we may, in the future, talk or write to our brothers in science of any nationality without fear of the confusion born at Babel. We quote from *The Educational Review* of Saint John, N. B.: "It is formed on the general model of the Aryan family of languages. Its material is largely taken from the English, but itsstructure, noun-declension and verb-conjugation is rather un-English, as are two or three of its vowels. It is far easier to learn than any existing language, and has already made rapid progress in twenty or thirty European or Asiatic languages. The text-book is 'Sered's Grammar with Vocabulary of Volapuk,' 420 pages, published in Glasgow, by Thomas Murray & Son, and in London, by Whittaker & Co. At a Congress of Volapuk scholars in Munich this year, a Volapuk Academy was formed. The next meeting of the Congress is in Paris, 1889."

TWO new and valued contributors have been added to our list since last issue, and we trust the articles by Mr. Berlin H. Wright, of Lake Helen, Florida, and Mr. Theo. D. A. Cockerell, of West Cliff, Colorado, will meet with the approval which the painstaking labors of the writers in the field of Conchology so richly deserve

AN absurd error crept into the article "On a New Floridian Natica," by Mr. Charles T. Simpson, in our last number. The types gave the size of the shell, *Natica Fordiana*, Simpson, as "length, 40 inches, diameter, 30 inches," whereas, the dimensions should be *length, .40 inches, diameter, .30 inches.* The shell was named in honor of Mr. John Ford, of Philada.

WE make a special request of our young readers to forward us any original matter upon Conchology for inspection previous to insertion in our "Young Collectors' Corner," which they must look upon as open to all young readers. Cultivate the habit of describing shells as *you* find them, and, take our word for it, it is not at all impossible that you may find the solution to many knotty problems which have puzzled older heads.

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We propose to continue and extend this information in future issues for the benefit of our readers having foreign correspondence.

Young Collectors' Corner.

Some Remarks on the Migration of Mollusks.

BY JOHN FORD.

Philadelphia, Nov., 1887.

It is hoped that the students who have visited this corner for the purpose of collecting something worth retaining, have also found much that is interesting and instructive in Mr. Simpson's article on the "Distribution of Land and Fresh Water Shells in the Tropics," which appeared in the last two numbers of THE CONCHOLOGISTS' EXCHANGE. The theories advanced in this article are certainly among the best that have been offered on the subject.

That many species have been transported by natural means across deep and wide seas is a fact that is generally acknowledged, but of the vehicles of their distribution in the remote eras alluded to, scarcely anything is positively known.

There seems little doubt, however, as Mr. Simpson suggests, of the uprooting of vast forests in the latter part of the Tertiary period, when plutonic forces were rending the earth almost continuously, and of their being driven by strong water-currents or mighty tempests far from their native regions. It is well known that such changes are of frequent occurrence even now, when the earth, comparatively speaking, is resting from her labors.

Thus it is easy to comprehend the tearing up and sweeping away, during the period of seismic disturbances referred to, of myriads of sturdy trees, among the boughs and roots of which numerous species of mollusks made their homes.

One may therefore readily believe that numbers of these "Giants of the primeval forests" were often massed together, with their extremities so interlaced as to leave some of each entirely unsubmerged during the period of drift; and that on many occasions both land and fresh water shells were safely ferried from continent to continent, as well as from island to island.

In such an event, too, the journey could be accomplished without much discomfort to the passengers, as certain fresh water species will live for months without food or drink, while many species of helix will endure the same apparent hardships for years, as I have good reason to know, having on one occasion found a number of Syrian species alive and active when taken from the box-prison in which they had been packed with dry sand, on the Arabian desert, quite two and a half years before. In each case the usual air-tight curtain had been stretched across the aperture of the shell, but a drop or two of water quickly dissolved this, and a few minutes later the animal awoke from its deathlike sleep as fat and vigorous as though only a night had passed since its incarceration.

In recent times the advent of species on shores foreign to their habitat is more easily explained. For instance: a fine specimen of *Litiopa striata*, Rang, a species peculiar to the Coast of Florida, was found a short time ago on a Rhode Island beach by Mr. H. F. Carpenter, of Providence.

That it was carried north by the Gulf stream and stranded by a favorable wind there can be no doubt, as Mr. Tryon states in his work on "Structural and Systematic Conchology," that "they occasionally suspend themselves from the stems of floating sea-weed," a condition exceedingly favorable to transportation in the way indicated.

Mr. Carpenter also secured, about the same time, a magnificent helix which had been found some days before in a grove a few miles from Providence. The shell was an inch or more in diameter, and of dark brown color, the animal being intensely black and shining, and crowned with a pair of "horns" fully an inch in length. Being unlike anything native to Rhode Island, and unknown to him, Mr. Carpenter at once forwarded it to the Philadelphia Academy of Natural Sciences for comparison. Here it was readily identified as *Helix alauda*, Fer., although larger, finer and blacker than any of the thirty or more specimens in the collection, all of which had been captured in the Island of Cuba, where the species strictly belongs.

It follows then, that this specimen must have reached Rhode Island through human agency, the most likely vehicle being a bunch of ba-

nanas, the kind of food which it at present prefers to any other. Dead shells of the same species have been found among bananas in Boston on one or two occasions, but they were all much inferior to the Providence specimen; a fact which seems to show that life in a New England grove is as beneficial to tropical land species as Northern waters are to those transported from Southern Seas.

Other well known species are carried North in various ways, many of them on the feet and among the feathers of migratory water birds. But the larger portion, perhaps, are associated with the young oysters annually taken from the Chesapeake and adjacent points, for transplanting in the colder waters of New York and New England. Among these, *Arca pexata*, *Littorina irrorata* and *Mytilus hamatus* are the most abundant. These also attain a a larger growth and greater perfection of form than their kindred have ever reached in the habitat which originally claimed them all; a result that seems "passing strange" when we remember that boreal species, as a rule, deteriorate the more, the further South they come.

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VOL. II. CHESTNUT HILL, PHILADELPHIA, PA., DECEMBER, 1887. No. 6.

A Monthly Publication designed for Conchologists and Scientists generally. Wm. D. Averell, Editor and Publisher.

THE SHELL-BEARING MOLLUSCA OF RHODE ISLAND.

BY HORACE F. CARPENTER.

Chapter XLII.

Genus Periploma, Schum., 1817.

Couthouy, in 1839, proposed the names of Cochlodesma for this genus in Journ. Bost. Soc. Nat. Hist. ii., p. 170. Gray, in the "Annals of Science," admits the genus, and it has been used by Gould, De Kay, Mighels, Chenu., Binney, and by Dall as late as 1870, but I follow Conrad's "Catalogue of the Anatinidæ" by giving Schumacker's name priority, having been proposed and used twenty-two years previous to Cochlodesma. There are twelve species, one of which inhabits New England.

155.—Periploma Leana, Con., 1831.

Syns:

Anatina Leana, Conrad. Cochlodesma Leana, various authors. Cochlodesma Leanum, Stimpson. Periploma Leana, Con., Tryon, &c.

Shell thin, sub-oval, inequivalve slightly gaping white, with a thin yellowish epidermis; hinge, a spoon-shaped process, resting on a rib and receiving the cartilage; right valve convex, truncate at the posterior end; left valve nearly flat and rounded at both ends; interior chalky white, except at the muscular and pallial impressions, where it is superficially pearly. Length $1\frac{8}{10}$, breadth $\frac{9}{20}$, height 1 inch. Abundant on Cape Cod and Nantucket. Inhabits from North Carolina to the Gulf of St. Lawrence. Probably inhabits the ocean shore of R. I., but has not yet been found in Narragansett Bay.

Genus Lyonsia, Turton, 1822.

There are eighteen species of this genus distributed world-wide, of which one inhabits the coast of New England.

156.—Lyonsia hyalina, Conrad.

Syns:

Mya hyalina, Con. Osteodesma hyalina, Couth., Gld., DeKay, Migh. Lyonsia hyalina, Con, Stimp., Tryon, Perkins, Dall.

Shell elongated, sub-ovate, thin, very fragile, translucent, pearly, inequipartite, the posterior end lengthened, narrowed and compressed at the extremity, but truncated a little at the tip, and gaping; epidermis wrinkled in radiating lines from the beak, each line microscopically fringed with short hairs, which entangle grains of sand; when these shells are found, as they sometimes are, completely covered with sand, the only way to remove it is to gently agitate them in water, as they are too delicate to be cleaned by the brush, like most shells. They are found in quiet bays where they are not exposed to the wind and waves, just below low water mark in sand. Length $\frac{7}{10}$, height $\frac{4}{10}$, breadth $\frac{3}{10}$ of an inch Inhabits from Florida to the Gulf of St. Lawrence. In April, 1836, the beach at Chelsea was covered with thousands of very large and mature ones, since which time only occasional specimens have been found. I found on one occasion quite a number of specimens near Nayatt, where I have examined the shores many times before and since without seeing one, and at another time I found several large ones at Buttonwoods, but on visiting the same place a week or two after, not a trace of one could be seen.

Genus Anatina, Lam , 1809.

The Lantern shells, as these are called, inhabit the sand near low water. There are fifty fossil species and thirty-seven living, one of which inhabits our coast.

157.—Anatina papyracea, Say.

Shell thin, white and pearly, inequipartite, the posterior end narrowed and truncated, gaping; right valve more convex than the left; beaks placed at the posterior third, not very prominent; surface wrinkled with faint lines of growth and covered with a very thin yellowish white epidermis; an elevated ridge runs from the beaks to the lower posterior margin; interior pearly; tooth very oblique, long and narrow, supported by a short, sharp, elevated rib. Length $\frac{13}{16}$, height $\frac{1}{2}$, breadth $\frac{1}{4}$ inch. Say described this species in the Journ. Acad. Nat. Sci., Phila., ii. 314, *1822*. Col. Joseph G. Totten dredged specimens of Anatina in Newport Harbor, which he described in Silliman's Journal, xxviii. 347. He proposed the name of *fragilis* in case his specimens were not identical with Say's *papyratia*, as it was first called. It has since been found on all parts of the coast from New Jersey to Labrador, by dredging in a few fathoms of water in both sand and mud, and is also taken from the stomachs of fishes.

FAMILY MACTRIDÆ.

A large family containing about two hundred species. The shells are somewhat triangular, with an internal cartilage; they are thin and often highly colored. Their habitat is in sand, and they have a tongue-shaped foot, which they use both for burrowing and for leaping.

Genus Mactra, Linn., 1767.

This genus is divided into several sub-genera by authors, with more or less reason, and contains 150 species. Some species are used for food, and in some places are collected to feed pigs. Only two species inhabits Rhode Island.

158.—Mactra (*Hemimactra*) *solidissima*, Chem.

Syns:

Mactra solidissima, Chem., Dill., Wood., Con., De Kay, Stimp. Mactra gigantea, Lam., Desh., Migh., Chenu. Mactra similis, Say. Mactra ponderosa, Phillips. Spirula solidissima, Dall. Hemimactra solidissima, Con., Tryon, Perkins.

Shell large, strong and solid, transversely oval, sub-equipartite, the anterior a little the shortest; surface covered with a dirty brownish or straw colored epidermis; beaks large and prominent; hinge strong, the V-shaped tooth delicate and adhering by a very small base, so that it is usually detached in opening the valves; lateral teeth long, thin and striated; this peculiarity is noticed in specimens of all sizes, from the youngest to the mature shells. Length 4 to 7, height $3\frac{1}{2}$, breadth 2 inches. Inhabits from Florida to Labrador. Extremely abundant on the outer shores of Long Island. It is not found in our bay, but is washed up on the sandy beaches at Newport and Narragansett Pier. The Indians formerly used the valves to hoe their corn with. It is sometimes called the giant, hen, leach and dipper clam. After a severe southerly storm, live specimens are washed up on the ocean shore at Newport, but to obtain them at other times, we must wait for a very low tide, and then wade out as far as possible, and by feeling in the sand with the toes, we can loosen them and then dive for them.

Another species, the *ovalis* of Gould, is found abundantly on the shores north of Cape Cod, but not to the south of it; they resemble *solidissima* very much, but are distinguished from it by the lateral teeth, which are smooth and destitute of striæ; there are several other minor differences, the most prominent of which is the V tooth; this is stout in ovalis and delicate in solidissima.

159.—Mactra (*Mulinia*) *lateralis*, Say.

Syns:

Mactra lateralis, Say, Con., De Kay, &c. Mactra rostrata, Philippi. Mactra corbuloides, Desh. Mulinia lateralis, Con., Perkins, Dall, &c.

Shell small, tumid, triangular, smooth, very convex, nearly equipartite, the posterior end prolonged into a snout in adult specimens, more rounded in young ones; beaks elevated, pointed, not touching, inclined forward, hinge strong, V tooth stout, and on each side of it, in the left

valve, is a strong lateral tooth, fitting into a deep pit in the right valve; surface covered with faint lines of growth; color white under a thin dirty brown epidermis; interior clear white, glossy. Length ½ inch, height $\frac{7}{20}$, breadth $\frac{3}{10}$.

Described by Say in the Journ. Acad. Nat. Sci., Phila. ii. 309, 1822. Inhabits from Maine to Florida, and along the northern shores of the Gulf of Mexico to Texas. This is an extraordinary range for any species of mollusca, not more so in point of miles, perhaps, than others which inhabit both sides of the Atlantic Ocean through the Polar regions, but in the extremes of climate, from our colder shores to the almost tropical waters of the Gulf. It is quite abundant in R. I., found on our sandy beaches, and also dredged in a few fathoms of water.

To be Continued.

DESCRIPTION OF NORTH AMERICAN SHELLS.

BY C. F. ANCEY.

6.—Helix commutanda, Anc.

This name I propose for Triodopsis Harfordiana, W. G. Binney (not Helix (Dœdalochila) Harfordiana, Cooper). The names of Polygyra, Dœdalochila, Triodopsis, etc., as shown by W. H. Dall, are merely sectional and *not* generic, hence it becomes necessary to change Binney's name, as I am confident the two Harfordiana belong to the same group.

7.—Helix (*Polygyra*) *unguifera*, Mouss.

H. unguifera, Mouss. in Journ. de Conch., 1883, p. 216, fig.

This shell, found in the vicinity of Mazatlan (Cinaloa), Mexico, by Mr. Forrer, appears to be the same as *H. acutedentata*, W. G. Binney (Proc. Ac. Nat. Sc., Phil., 1857, p. 83) said to have been found at Mazatlan and Guaymas; at least it may only be a smaller variety distinguished from the type by its smaller size, 5½ instead of 6 whorls and in having the hook on the superior tooth and not on the inferior (as stated, perhaps erroneously, by Binney).

8.—Helicina Durangoana, Mouss.

Anc. p. 218, 1883.

This is perhaps the same shell as the one found by Mr. Xantus in the Sierra Madre (fig. in Binney's Land and Freshwater Shells of North America). As Mr. Mousson's diagnosis is incomplete in regard to the peculiar sculpture and operculum of this species, I give the following description from authentic specimens in my collection:

Testa imperforata, depresso-conica, subnitida, glabrata, solidula, luteo-albida aut candida, sœpe ad summum luteo tincta; Apertura intus pallida, pariter luteola. Spira late conoidalis, apice subobtusa; anfractus, 6; lineis exilibus subverticalibus undulatisque, confertim vixque perspicue (ad apicem evanescentibus) sub lente sculpti; prœtereà obsoletis nonnullis remotisque spiralibus lineolis exorati; subconvexi, regulariter et sat rapide crescentes, ultimus in medio obscure rotundeque angulosus, infra convexus. Apertura semirotunda, externe obtuse angulata, basi ad columellam angulatim unituberculata. Peristoma incranatulum, tenuiter expanso-reflexum. Callum columellare depressum, nitidum. Operculum rubellum semitestaceum.

Diam.: 9⅔ mill.

9.—Liogyrus Lehnerti, Anc.

Testa subconoidea rimata, solidiuscula, subvirenti-hyalina, vel cornea, sinistrorsa, nitida, sub lente striatula, glabra spira apice valde obtusa: anfractus 4, rapide, sat regulariter tamen crescentes, tumidi, rotundati, sutura profunda; primo depresso, penultimo turgidulo; ultimo ad peripheriam inflato, dimidium testoe fere adœquante, subtus convexo, ad aperturam haud solutam regulariter descendente. Apertura fere recta, subcircularis-oblonga, superne et inferne obscure angulata, marginibus continuis.

Long.: 3½, lat.: 3¼ mill.

A Liogyro pupoideo, Gould, forma latiore, apertura haud soluta, umbilico majore, ultimo anpactu tumidiore et præcipue testa sinistrorsa discrepat.

Several specimens of this very curious sinistrorse shell were found in the Potomac, near Washington, D. C., by Mr. E. Lehnert, after whom I name it. Gould's species was also found in the same station.

The New Caledonia shell, described as a Cyclostomoid (!) shell by Mr. Crosse, under the name of *Heterocyclus Perroquini*, is somewhat allied to Valvata pupoidea, and the identity of Heterocyclus and Liogyrus has been proposed, still it differs in having the labrum effuse and somewhat thickened (sometimes reflected, as in another species which seems to have the same generic characters as Perroquini, although the aperture is not solute,—Valvata Petiti, Crosse). The author should have perceived the resemblance between the two shells, when describing Heterocyclus as a land shell!!

10.—Bithynia tentaculata, Lin.

This European shell was sent to me several years since by Dr. W. Newcomb; the specimens were collected at West Troy, and others have been found at Oswego, N. Y. The presence of this well known species in the waters of N. America is doubtless the result of a recent importation.

The surface of the specimens is much eroded.

11.—Polygyrella polygyrella, Bland & Cooper.

Helix polygyrella Bland & Cooper in Am. Lyc., N. Y., vii, p. 365. pl. iv. fig, 13–15.—Binney (W. G.), in Bull. Mus. Comp. Zool., 1886, p. 36, pl. vi. fig. 12–14.

I have in my collection a variety (which may be called *Montanensis*) of that species, distinguished from the type in having a longer and more developed parietal tooth, more triangular aperture, the basal margin of it being more thickened and horizontal, and also the ribs of the upper surface more distant and coarser. It has been figured by W. G. Binney, in the last said work, from a specimen collected by Mr. Hemphill in Deer Lodge Valley, Montana Territory.

12.—Pupa corpulenta, Morse.

Var, *parietalis*, var. nov.

Testa dentibus duobus in pariete instructa.

Ogden Canyon, Utah.

BRIEF NOTES ON THE LAND AND FRESH-WATER SHELLS OF MERCER CO., ILL.

BY WILLIAM A. MARSH.

FAMILY VALVATIDÆ.

Genus Valvata, Muller.

75.—Valvata tricarinata, Say.

Shell orbicular, tricarinate, light horn color, with three whorls or volutions, three revolving carinate prominent lines giving the shell a quadrate appearance. Spire convex, apex obtuse, umbilicus large, carinæ placed—one on the upper edge of the whorl, one on the lower edge, and the third on the base beneath.

This species is found rather abundantly from May to September, in all the small lakes of the Bay Island, and sometimes in our river sloughs, and seems to avoid swift running water. I find it usually associated with *Somatogyrus subglobosus, Amnicola porata, Bythinella obtusa* and *Valvata bicarinata*.

76.—Valvata bicarinata, Lea.

Shell orbicular, flattened above, bicarinate, thick, very light horn color, widely umbilicate, sutures impressed, spire depressed, whorls 3½ to 4, convex; aperture rounded.

This shell is found here in the same localities as *tricarinata*, and is often associated with it. It seems to be quite variable, in many respects resembling *tricarinata*, but differs in being of a lighter color, wider umbilicus, very much larger in size, and, generally, the spire is much more depressed.

Some specimens have a slight third carina. Mr. Lea says that the animal differs from that of *tricarinata*.

FAMILY STREPOMATIDÆ.

Genus Pleurocera, Rafinesque.

77.—Pleurocera subulare, Lea.

Mr. Lea's description of this species is as follows:

Shell elevated and acutely turrited, horn colored; apex acute; whorls about 12, flat, carinate on the middle of the body-whorl; base angulated; aperture white and one-fourth the length of the shell.

This remarkably fine shell, as found here, is so variable that in some respects it would be extremely difficult to reconcile it with Mr. Lea's descriptions and observations. It varies greatly in the number of its whorls, ranging from 10 to 12 in number. Some specimens are of a very dark horn color, others very light; some have a very dark purple epidermis with purple columella. Some forms are striate, others smooth, and while many are very finely banded, others are devoid of bands. It also varies in the number of carinæ on the body-whorl, which usually range from five to seven. In many, the whorls are very flat, while in others they are quite convex, and some specimens have from one to three revolving striæ. Again, some individuals are rugosely striate on all the superior whorls. The Family Strepomatidæ is represented in North America by eight sub-genera, with several hundred so-called species, but it is a singular fact that Mercer Co., Illinois, has but one species of this very numerous family. Our *Pleurocera subulare* is usually a very abundant shell here, being found in all our sloughs, lakes, creeks and rivers. The small lakes of the Bay Island are full of this species, and in July and August vast numbers of them may be found along the margin of the river, clinging to drift-wood, where they have been carried by a sudden rise in the waters from the different lakes in the Bay. I have specimens of this shell from Northern Minnesota, collected in or near the Mississippi River, and from different stations along the river as far south as St. Louis, Mo.

FAMILY RISSOIDÆ.

The Family Rissoidæ seems to be represented in this country by four sub-genera or genera, viz: Bythinella, Moquin-Tandon; Somatogyrus, Gill; Amnicola, Gould and Haldeman; and Pomatiopsis, Tryon, embracing eight species in all.

Genus Bythinella, Moquin-Tandon.

78.—Bythinella obtusa, Lea.

This shell, as found here, is sub-cylindrical, rather thin, very light horn color, translucent, smooth, slightly perforate; spire short; sutures impressed; whorls four, always truncate, convex, aperture nearly round.

It is by no means a common species. I find it sparingly at times of very low water in the channels of the river sloughs from June to September. In localities where found at all it is usually quite abundant. Of several hundred specimens taken in the channel of Upper Cowan Slough in 1880, every specimen was truncate, only the four whorls remaining. It is usually found associated with *Amnicola*, *Somatogyrus* and *Lioplax subcarinata*. The cause of its truncated apex is unknown to me as the shells of other species taken with it have perfect spires.

(*To be continued.*)

NECROLOGY.

Professor Ferdinand Vanderveer Hayden, the distinguished geologist, died at his residence, 1805 Arch St., Philadelphia, December 21st, 1887, aged 58 years. He was a native of Westfield, Mass., and made his first exploration in 1853 for Professor James Hall, of New York, in the "Bad Lands" of Dakota, in which region, and in adjacent States and Territories, he spent more than twenty years. The deceased filled the chair of Geology and Mineralogy in the University of Pennsylvania from 1865 to 1872, and had charge of the U. S. Geological Survey of the Territories from 1867 until 1873.

George W. Puterbaugh, Conchologist, of Elkhart, Ind., died of heart disease, November 29th, 1887, after nearly one year's illness.

Andrew Garrett, Conchologist, died at Huahine, Society Islands, November 1, 1887, aged 65 years.

The Conchologists' Exchange.

A Publication designed for Conchologists and Scientists generally.

ISSUED MONTHLY

BY

WM. D. AVERELL,

EDITOR AND PUBLISHER

☞Correspondence upon Conchology, as well as reliable items of interest concerning the Mollusca, their habits, localities, etc., kindly solicited from all. Matter for publication must be received by the tenth of each month.

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Editorial Notes.

SINCE our last issue we have received word through Professor George W. Tryon, Jr., of the sad death of Mr. Andrew Garrett, at Huahine, Society Islands, a more detailed account of whose useful life and labors we will print in the January number. As a child, Mr. Garrett gave decided evidences of his self-reliant character and thirst for scientific knowledge, for we read that he took a journey alone of a hundred miles or more to visit a museum, at the age of eight years. This trait of character induced him later on to leave home for Polynesia, where he has since resided a close student of Nature, preferring Conchology to other branches of study, and making that his life-work. That his work has been well done is attested by his numerous writings, his large collections, and the unsolicited testimony of his neighbors and correspondents. Mr. Garrett was an unassuming man, learned in his own right and by the power of his will, and he has left an heritage to our youth, that of self-reliance, by which they may also lead lives of usefulness and honor.

WE will not be able to print in this number a continuation of the article, "Notes upon the Unionidæ of Southern Florida, by Dr. S. Hart Wright and Mr. Berlin H. Wright, owing to the non-receipt of copy, but we hope to do this in next issue.

A FEW of our young readers have sent us communications of conchological interest, but our limited space will not permit us to print long dissertations on the discoveries of others, for such is what several of them are. What we want is *original* matter—discoveries, experiments, and narratives of what the writers *themselves* have experienced. Much trouble and correspondence may be saved by our young friends if they will follow this rule.

MR. H. F. CARPENTER favored us with a visit lately, which we enjoyed hugely. Among the many interesting items of news obtained from this gentleman were the very interesting accounts of his finding *Carychium exiguum*, Say, on a hilltop, far removed from its usual habitat; and the discovery of the Cuban Coryda, *alauda*, Fer., in Rhode Island, by the roadside in a grove, where it had evidently been thrown from a bunch of bananas by a country trader. This beautiful animal is still alive in its shell, and still feeds on bananas, its native food.

WE are making a determined effort to get January number to you earlier than usual, and if we do not succeed, it will be because of dilatory copy.

YOU can aid us vastly in producing this, *your* paper, by securing subscribers among your friends and correspondents. The Premium List is still open to our friends who wish to avail themselves of its benefits.

Young Collectors' Corner.

The Dredge.

BY CHAS. T. SIMPSON.

Probably but a few novices and amateur conchologists ever use the dredge, and yet it is one of the most indispensable implements that a collector can have. I remember that in my earlier days as a collector I supposed it was a complicated affair, and that only an expert could manage it. Perhaps a little of my experience with it may be useful to others. Years ago, in Florida, I found that of many species only worn specimens or scattered valves were thrown up on the beaches, and I determined to build the simplest kind of an affair with which to attempt an exploration of the sea-bottom, in the hope of getting these specimens in good condition. I had a blacksmith cut off two pieces of iron three-sixteenths of an inch thick, three inches wide and two feet long. One edge of each of these blades was hammered out thin, for a scraping edge, and along the other small holes were punched, two inches apart. These pieces were placed parallel to each other, with the sharpened edges out, and the edges having the holes about five inches apart. The ends were fastened together by five-eight round iron bars, flattened at the ends and riveted to the blades, and curved so that an end view of the blades would look like this ⊃. Four holes were punched in the ends of the blades, and through each one of these was brought a three-eight round iron rod, riveted on the back of the blades (the cutting edges being the front of the dredge) and welded into an eye directly in front of the center of the blades, and about two feet from them. A piece of canvas four feet long was doubled in the middle, and the ends securely fastened to the holes in the rear of the blades by a lashing, making a bag open at the sides which were filled each with a triangular piece of fine fish net, with about half-inch meshes and thoroughly sewed in. To the eye in front was fastened a strong rope three-fourths of an inch in diameter and 100 feet in length, and my machine was ready to be tried.

I confess that I had many misgivings as to whether it would work, especially when the old Salt, in whose sail-boat I was going to try it, offered to bet that it wouldn't even fill with mud. We reached the mouth of the Manatee Bay, the sail-boat was brought up into the wind so that it barely moved, and I threw the machine overboard into some seven fathoms of water, letting out gradually nearly all my line. After a little it began to pull, which was encouraging, and soon I felt a peculiar jarring sensation as delightful as a fisherman feels when a big fish has hold of his line, and I knew that at least I was getting a bag full of mud. After what seemed to me to be an age, but what was perhaps not more than ten minutes, I drew it up, the sand and mud washing out as it came slowly through the water, and dumped the contents, perhaps nearly a bushel, on the deck. When I washed it out, judge of my surprise and delight at finding over thirty species of shells in several hundred samples, nearly all living or in good condition, and many of which were either new to me or had only been found dead and badly worn. I could hardly keep from jumping over board and it was now my turn to laugh at the old skipper.

From that day on I found this rude and simple machine a perfect success; in fact it contained the essential principle of Ball's celebrated dredge, and I never had a particle of trouble with it anywhere. For convenience of carrying, or for working in rocky bottom, it is better that the arms should be made in two pairs, one pair at each end of the dredge and fastened to it with an eye at each end of the arm, passing around the curved iron at the end of the frame. The drawing end of each pair of arms should end in a large eye, the rope to be fastened through one of these, and the other tied fast with rope yarn, and then, in case the dredge becomes fast, the rope yarn will break under a strain, allowing the one pair of arms to swing back and with it one side of the dredge, when it can generally be drawn up without any trouble. A square box a few inches deep and a couple of feet across, with a bottom made of fine copper screen and held in place by any simple means over the side or stern of the boat, is of immense advantage, as the contents of the dredge can be dumped into

it and easily washed out. With a large sail-boat it is also an advantage to have a whip leading down from the mast to lift the dredge from the water, and a second whip or line leading through a block at the top of the mast, and hooked into an eye made of rope in the bottom of the sack, is very convenient in dumping, as the dredge can be raised to its place with the whip, then the line hooked into the bottom, when it is easily lifted up until the contents will run out. One will find in dredging all day by hand alone that it is heavy, fatiguing, wet work. For small sail or row-boats the dredge should be smaller, from 18 to 20 inch blades will be found heavy enough. I hope that the coming season, many who have never tried dredging before, may be induced to do so, and the result will be the obtaining of many rare species and specimens and in better condition than usually found along the shores of rivers or the sea beach.

Ogallala, Neb., Dec. 5th, 1887.

Notes on Teredo.

BY W. W. WESTGATE.

I see in "Shell-bearing Mollusca" Mr. Carpenter says that he has never seen a specimen of any species (Teredo) in Rhode Island. That is strange, because there are several species of Teredo found from Massachusetts Bay southward: Teredo navalis, Linn. found from Cape Cod to Florida; Teredo megotara, Hanley, Massachusetts Bay to South Carolina; Teredo, dilatata, Stimp., same as the last; Teredo Thompsoni, Tryon, around Cape Cod; besides Xylophaga dorsalis, Forbes and Hanley, and Xylotrya fimbriata, Jeffreys, have an extended range, and might occur there. I make the following extracts from Fisheries and Fishery Industries of the U. S.: "This species (T. navalis) is very abundant along the southern coast of New England, from New York to Cape Cod, wherever submerged wood-work, sunken wrecks, timber buoys, or floating pieces of drift wood occur." "At Provincetown, Cape Cod, about forty feet of the end of the steamboat wharf was so weakened by its borings that it completely gave way under a load of merchandise stored upon it." "Capt. B. J. Edwards told me that formerly, when the cedar or channel buoys in Buzzards Bay, Mass., were not taken up, they would not last more than two years, owing chiefly to the attacks of this Teredo." "Teredo megotara has been found in floating pine wood at Newport, R. I., and in cedar buoys at New Bedford, Mass." I could give more instances, but I think this is enough to show that Mr. Carpenter can add a few more species of shells to his already fine list.

Exchanges.

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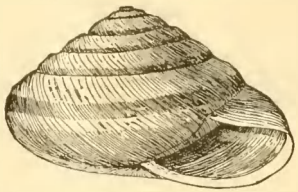

Helix (Aglaia) fidelis, Gray, Oregon.

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VOL. II. CHESTNUT HILL, PHILADELPHIA, PA., JANUARY, 1888. No. 7.

THE SHELL-BEARING MOLLUSCA OF RHODE ISLAND.

BY HORACE F. CARPENTER.

Chapter XLII—Continued.

FAMILY PAPHIIDÆ.

This family, according to Tryon's "S & S. Conch., Vol. iii, 161, 1884," contains two genera, Paphia and Ervillia; Paphia being divided into six sub-genera. In his "Catalogue of the Family Tellinidæ," he makes a subfamily Paphiidæ and treats these sub-genera as genera. The family contains thirty-three species, only one of which inhabits New England; this is the

Genus Ceronia, Gray, 1849.

This genus contains four species, one inhabiting Australia, another Peru, a third ranging from England through the polar regions to Nova Scotia, and the fourth is

160—Ceronia arctata, Conrad.

Syns:

Mactra arctata, Con. Mactra deaurata, Con. Mactra sub-triangulata. Wood., Griffith. Mesodesma arctata, Gould, De Kay, Stimp. Ceronia arctata, Chenu, Binney, Dall, Tryon, &c.

Shell sub-triangular, wedge shaped, solid, very inequipartite, the posterior end very short, its lower part truncated; anterior narrowed, rounded; surface covered with a shining yellow epidermis; beaks erect; hinge a deep spoon-shaped cavity for the cartilage; a long V tooth, opening at an acute angle and a straight, striated lateral tooth on each side of it. Length, 1½ inches, height, one inch, breadth, $\frac{11}{16}$.

This species was described by T. A. Conrad in Journ. Acad. Nat. Sci., Phila., vi, 257, 1830. It is found abundantly in Mass. Bay, and at all points north of Cape Cod to the St. Lawrence River. Perkins does not mention it in his "Molluscan Fauna of New Haven," but S. Smith has found it at Montauk, Long Island; a few specimens have been found at Nantucket, and Tryon quotes it from Massachusetts and Rhode Island, but I have never found it in our waters.

FAMILY SEMELIDÆ.

This family contains nine genera and about one hundred and ten species, of which only one inhabits New England.

161.—Cumingia tellinoides, Conrad.

Syns:

Mactra tellinoides, Con., Russel, De Kay. Cumingia tellinoides, Con., Gould, Stimp., Dall, &c.

Shell elongated, triangular-ovate, thin and fragile, white, nearly equipartite, anterior tumid, broad and rounded, posterior compressed, pointed and warped like a Tellina; beaks central, not inclining to either side; surface with sharp, elevated lines of growth crossed by microscopic radiating lines; interior glossy white; lateral teeth distinct in the right valve, but not in the left. Length, $\frac{4}{5}$; height, $\frac{9}{20}$; breadth, $\frac{1}{5}$. Described by T. A. Conrad in Journ. Acad. Nat. Sci., Phila., vi. 258, 1830. Habitat from Cape Cod to Florida, (Verrill). Very rare at New Haven, (Perkins), Florida, (Conrad,) North Carolina, (Coues). Gould says: "It is found abundantly in the region of New Bedford, Martha's Vineyard, and probably may be found everywhere south of Cape Cod." It has not yet been found in R. I. to my knowledge.

The genus Cumingia was named in 1833 by Sowerby, and dedicated to the late Hugh Cuming, a distinguished collector of shells, the species of which, ten in number, inhabit sponges, sand and the fissures of rocks, in consequence of which, the valves often assume an irregular appearance.

FAMILY TELLINIDÆ.

This family contains sixteen genera, and includes many of the most beautiful shells of the tropics, with highly polished surfaces, and

bright and glowing colors. Two of these genera, Tellina and Macoma, are represented in R. I.

Genus Tellina, Linn., 1758.

This genus contains over three hundred species living, and one hundred and seventy fossil. The animals inhabit all shores, living in sand and mud at no very great depths. They have long and slender divergent syphons; the mantle is delicately fringed, and opens widely in front for the tongue-shaped foot, by which it travels about. The shells are generally thin, highly colored and delicately sculptured. The genus has divided into several sub-genera, two of which are represented in R. I.

162.—Tellina (Angulus) tenera, Say.

Shell small, thin and fragile, white or tinged with rose, iridescent, concentrically wrinkled by sharp lines of growth, inequipartite, shortest and pointed behind; hinge teeth, two in each valve, one larger than the other and grooved; posterior lateral tooth distinct; anterior one nearly obsolete; beaks behind the middle. Length, $\frac{11}{20}$; height, $\frac{7}{20}$; breadth, $\frac{1}{4}$ inch.

Discovered by Mr. Benjamin Say, brother of the great Naturalist, near Great Egg Harbor, New Jersey, and described by Thos. Say in Journ. Acad. Nat. Sci., Phila., ii, 303, 1822. Inhabits from Florida to the Gulf of St. Lawrence. Not very common north of Cape Cod Most abundant from Buzzard's Bay to New Jersey. A very pretty little species living on all our sandy shores just below low water mark.

Tellina (Angulus) modestus, Verrill.

I have never seen this species; it was described in the April number of Silliman's Journal, 1872, page 285 He describes it as being smooth, shining, iridescent, with fine concentric striæ; color pink, straw colored or white, often banded concentrically with these colors. He enters at some length upon the characteristics which distinguish it from A. tenera. He finds it in Vineyard Sound and Buzzard's Bay in six to ten fathoms water, on a sandy bottom, also in Long Island Sound, off New Haven, in mud. A figure of the shell is given, which, if printed of life size, is $\frac{1}{2}$ inch in length, by $\frac{6}{20}$ in breadth.

In the "Invertebrate Animals of Vineyard Sound," page 383, 1874, he re-names it Angulus tenellus, Verrill. In the Cat. Mar. Moll., 1822, by the same author, he quotes it from Narragansett Bay as well as the above localities, and says, "this may only be a variety of A. tener.

163.—Tellina (Peronæa) tenta, Say.

Shell small, oval, thin and fragile, inequipartite, the posterior end shortest, narrowed, warped and gaping widely; valves very convex, the left one more so, and bent far to the right, exterior shining, covered with very fine lines of growth, interior polished, white, tinged with yellow near the beaks and covered with radiating lines; margins indented; hinge delicate; cardinal teeth, two in the right valve and one in the left; lateral teeth minute: (Say says, "lateral teeth, none"). Length, $\frac{3}{5}$; height, $\frac{2}{5}$; breadth, $\frac{1}{3}$ inch.

Discovered by Dr. Ravenel, in South Carolina, and described by Say in American Conchology, part seven (no date is given for this part. It was printed after Say's death, which occurred in Sept., 1833). It inhabits from South Carolina to Cape Cod. It does not live near the shore, but is obtained by dredging in mud. We find it off Rumstick, at the mouth of Warren River.

To be Continued.

BRIEF NOTES ON THE LAND AND FRESH-WATER SHELLS OF MERCER CO., ILL.

BY WILLIAM A. MARSH.

FAMILY RISSOIDÆ (*Continued*).

Genus Somatogyrus, Gill.

79.—Somatogyrus subglobosus, Say.

Shell subglobose, whorls from 3½ to 4, rounded, very rapidly enlarging; suture impressed, horn colored; aperture sub-ovate, umbilicus very narrow, nearly closed by the labrum; spire very short, convex. This shell is found in all the small lakes and sloughs very abundantly. I have never found it in the river, nor in any of our creeks. The animal is quite active at times.

80.—Somatogyrus depressus, Tryon.

Shell orbicular, rather solid; spire depressed; whorls four, convex, last whorl large; umbili-

cus narrow, aperture semicircular; labrum appressed within; sutures impressed.

This fine little shell inhabits the Myers' Slough, below the Bogus Island, very near the river. In 1822 I found it in great abundance clinging to the moss which covered the whole bottom of the slough, which is what is known as a *spring* slough, being fed by numerous springs, the water being very clear and cold. It is a very small species, not over one-half the size of *Somatogyrus subglobosus*. As found here it is nearly typical. I have been informed that my friend, the late Professor David S. Sheldon, of Davenport, Iowa, furnished Mr. Tryon with his type specimens. I have never found the little shell in any other locality in our county, and I am inclined to believe that it is found only in localities where the water is very clear and cold.

Genus Amnicola, Gould and Haldeman.

81.—Amnicola porata, Say.

Shell obtusely conic, or subglobose, volutions four, rather convex, very slightly wrinkled. Spire obtuse, labrum and labium equally rounded, meeting above in a sub-acute angle, the upper edge of the latter appressed to the preceding whirl. Umbilicus distinct. This species is probably common in all the sloughs of the Mississippi River, and in the Bay Island lakes. It is one of those species that is fond of muddy situations often associated with *A. limosa* and *Som. subglobosus*. The difference between *porata* and *limosa* is so slight that they are difficult to separate. Both of these species probably range from Maine to Colorado and Texas. *Porata* seems to differ from *A. limosa* in being larger and more globuse and has a more distinct umbilicus. It is not found here as numerous as *limosa*.

82.—Amnicola limosa, Say.

Shell conic, sub-umbilicate, dark horn colored, epidermis obsoletely wrinkled, aperture ovate-orbicular, suture impressed. This shell is probably much more common than *A. porata*, and is usually found in our river sloughs, often associated with *porata*. It seems to prefer muddy localities. I have found it in considerable numbers along the margins of Sturgeon Bay, but not later than the latter part of August. I have also found it sparingly several miles up the Bay in the Myers Slough associated with *Som. depressus*.

83.—Amnicola Cincinnatiensis, Anthony.

Shell ventricose, sub-umbilicate, greenish horn color, whirls four and one-half to five, very smooth, spire entire at the apex. Sutures deeply impressed, aperture dilated, orbicular. This, our largest *Amnicola*, is perhaps rare here, as only about a dozen specimens have been found, and these in but one locality, at the junction of the Lakey and Hanneman Sloughs.

In the tertiary clay beds of our county are found *fossil*, what I suppose to be two species of *Amnicola*, probably *Cincinnatiensis* and *porata*.

84.—Amnicola parva, Lea.

Shell obtusely conical, rather thin, yellowish, smooth, umbilicated. Spire short, suture impressed, whirls four, inflated, aperture large, nearly round.

This very small species I did not suppose would be found in our county, but quite recently, on making a critical examination of a lot of *amnicola* and the *Somatogyrus depressus* from Myers Slough, Bay Island, I found a very few of this shell. Future explorations may reveal the fact that it is quite common in the locality mentioned. It is a little difficult to distinguish from *Am. orbiculata*, and even the young of *Som. depressus* without the aid of a good glass. It is probably common in Winnebago County. My friend, Mr. J. B. Upson, of Rockford, sent me several hundred of this very interesting little species.

SUB-FAMILY POMATIOPSINÆ, STIMPSON.

Genus Pomatiopsis, Tryon.

85.—Pomatiopsis lapidaria, Say.

Shell turreted, sub-umbilicate, with from five to seven volutions, dark horn color, whorls rounded, suture impressed, aperture longitudinally ovate-orbicular, operculated.

This very interesting little univalve used to be quite common along the margin of all our small sloughs, adhering to leaves, sticks of wood, and stones; also along Edward's and Pope Creeks, but at present it is rarely found, and no doubt in a few years will become en-

tirely extinct. The last living specimens that I have found were along the margin of a spring swamp, near Wild Cat Slough. It is found fossil here in the tertiary or postpleiocene clays, and beds of our Mississippi River bluffs.

PULMONATA.

Sub-order Limnophila.

FAMILY AURICULIDÆ.

SUB-FAMILY AURICULINÆ.

Genus Carychium, Miller.

86.—*Carychium exiguum.* Say.

Shell elongated, tapering at both ends, white, translucent, shining, apex obtuse, whirls five to six, convex, oblique, with transverse striæ, suture distinct, impressed, aperture obliquely oval, white lip thick, reflected, flattened; umbilicus perforated, a plait-like tooth, on the middle of the columella, about midway between the extremities of the lip. This peculiar and very minute species used to be found abundant in nearly all moist situations in our county, being found on moss, wet leaves, bark, driftwood, and even under old rails and fence boards, along old fence rows, in moist places. It probably inhabits nearly every State in the Union. It is very sluggish in its movements, but when in motion carries its shell horizontally. Many years ago, after a freshet, in our small spring sloughs, I found great numbers of this minute shell, in the *drifts*, where they had been swept down from their hiding places by the sudden rise in the waters.

To be Continued.

ANDREW GARRETT.

BY REV. EBENEZER V. COOPER.

Mr. Andrew Garrett, the celebrated conchologist, died at his residence, on the Island of Huahine, Society Group, South Seas, on the 1st of November, (1887,) in the 65th year of his age. For some months past he had suffered from a severe form of cancer in the face, which at last brought about his death. Mr. Garrett was the third child in a family of fourteen, and was born on the 9th of April, 1823, in Beaver Street, Albany, New York State. His mother was one Joanna Van Nean Campaneaux, a native of Belgium, of good education, and speaking several languages; his father being Francis Garrett, a native of Canada. Both parents lived to old age, the mother attaining 72 years, and the father 84 years. The early life of Andrew Garrett was spent in Vermont State, where he very soon manifested a decided scientific turn of mind: on one occasion, at eight years of age, he left home without warning to visit a museum some hundred miles away, which, having accomplished, he returned home again in safety. He had a great fondness for travel, and to satisfy the longing, he went to sea at the age of 18. As a shell collector, he made his first acquaintance with the South Pacific in 1848, and in 1852 he ultimately adopted that island-studded ocean as his special field of research. Since that time Mr. Garrett has visited almost every island of note in the various groups of the South Pacific, spending considerable time in each group. His studies not only embraced shells of the marine, fresh water and land orders, but also birds, fishes, and other objects of natural history; he was also a botanist. For one period of ten years he was professionally engaged in the interests of the Goddefroi Museum, Hamburg, during which time was published "Andrew Garrett's *Fische der Sudsee*, in six parts, edited by Dr. Albert Günther, of the British Museum." Mr. Garrett was also, for a time, associated with Prof. Agassiz.

In addition to visiting and residing in every group of Islands in the South Pacific, Mr. Garrett visited and explored many parts of the Atlantic and Pacific Coasts of South America, the East and West Indies, the Sandwich Islands, and some parts of the United Seas His diligent and learned researches soon gave him a place as an authority amongst conchologists—an authority now everywhere recognized. His correspondents were very numerous, residing in all parts of the world. Mr. Garrett's private collection of shells (now on sale) consists of over 8000 species, and comprising over 30,000 examples, representing almost every known part of the globe. Of this large collection, Mr. Garrett has himself collected some 4000 species. The deceased was a corresponding member of the California Academy of Sciences, and of the Philadelphia Academy of Natural Science.

The following is a list of Mr. Garrett's principal writings:

"In proceedings of Zool. Soc., London; list of *Mitridæ* collected at Rarotonga, Cook's Isles; descriptions of two new species of *Separatista*; of two new species of *Coecum*; of a new species of *Scissurella*; on the terrestrial *Mollusca* of the Viti Islands. In the *Quarterly Journal of Conchology*, (Leeds, England,) "Occurrence of *Crepidula aculeata* at the Marquesan Islands;" "Occurrence of *Gadinia reticulata* in Eastern Polynesia;" Annotated catalogue of the species of *Conus* collected in the South Sea Islands;" "Catalogue of the Polynesian *Mitridæ*, with remarks on their geographical distribution, station and description of supposed new species;" "Annotated catalogue of the *Cypraeidea* collected in the South Sea Islands." In the *Bull. Soc. Malacologique de France* (Paris)—on the terrestrial *Mollusca* of the Marquesan Islands. In *American Journal of Conchology*, Vol VII, "Descriptions of new species of land and fresh water shells from the South Sea Islands" (plates). "List of Viti *Bulimus*, and descriptions of new species" (plate). In proceedings of the California Academy Nat. Sciences—"Descriptions of new species of shells inhabiting the Sandwich Islands;" "Descriptions of new species of fishes inhabiting the Sandwich Islands;" "Descriptions of new species of South Sea shells." In proceedings of Acad. Nat. Science, Philadelphia—"On the terrestrial *Mollusca* inhabiting Cook's Islands, Society Islands, and Samoan group;" "List of land shells inhabiting Rurutu (one of the Austral Islands), with remarks on their synonyms and geographical range," and several other papers.

In conclusion I would state that I am glad to have known Mr. Garrett, and to have had him for a neighbor for nearly seven years. The man was an interesting study in himself. He was self-taught in every sense of the word, and his ability and achievements were wonderful and most striking. Outside his own special study, Conchology, he was deeply read in kindred subjects, and no branch of natural history seems to have been overlooked. He was very unpretentious, and no one from casual observation would imagine him to be a *savant*.

Mission House, Huahine, November 4, 1887.

Notes on the Strepomatidæ of Illinois.

BY A. A. HINKLEY, DU BOIS, ILL.

Having collected shells of this family in different parts of the State, a few notes of those that have come under my observation may be of interest to some of the readers of THE CONCHOLOGISTS' EXCHANGE. Although this is an extensive family, and offers a wide field for research and observation, comparatively few collectors take much interest in them. Probably this is owing to the want of good works on the subject, and the difficulty of obtaining the Southern forms.

Considering species found in the Wabash river, White Co., Ill., as belonging to the State, I have of the family four genera and fourteen species.

Genus Angitrema, Haldeman.

A. armigera, Say.

Shell with a prominent row of knobs encircling the body-whorl, plain or banded; habitat, Wabash river. I found this species rather unexpectedly in a still pool formed by a log which had drifted so as to turn the current, associated with *A. verrucosa*, and attached to small pieces of drift-wood, or crawling about on the mud. But few specimens were found of each. I have since been informed that they are plentiful lower down the stream near Wabash Station, on the L. & N. R. R.

A. verrucosa, Raf.

Shell with several rows of small tubercles. Most of the specimens taken were young, and do not exhibit the tubercles as plain as the full grown ones; some are inclined to be purple within the aperture and on the columella.

Subgenus Lithasia, Haldeman.

L. obovata, Say.

Shell plain, some faintly banded, all are truncate, two to four whorls remaining. Habitat, Saline and Little Wabash rivers. The young or half-grown shells answer very well to Mr. Say's description, but the mature ones present considerable difference. I cannot see that

they have any resemblance to *Anc. prærosa*, as he suggests in his observation. At a glance I would take them for some of the "heavy pupæform or cylindrical species" of Goniobasis. Some of them compare well with *Gon. lepida* in general outline, and a few resemble fig. 576, on page 299 of Tryon's "Strepomatidæ." Found most plentifully where there was considerable current.

Subgenus Pleurocera. Rafinesque.

P. alveare, Conrad.

Shell with a row of small tubercles on the last whorl, four or five striæ on the base, wanting on some, first few whorls plicate, to be seen only on young specimens, as all mature ones are decollate. Habitat, Saline river. Common, found in swift water on rocks.

P. undulatum, Say.

Shell large with an impressed band, tuberculate on the angle of last whorl; on some the tubercles are hardly discernible. Habitat, Wabash river and ponds. All specimens collected were in still water, on sand or mud bottom.

P. moniliferum, Lea.

Shell striate on the base, banded or not banded. Close to the last species, and may be the same. Found in the same situation.

P. canaliculatum, Say.

Shell with a deep groove on the last whorl; differs from the two last species by not having tubercles, and not so strongly angulate on the periphery. One specimen collected has two well-defined grooves on the last whorl, one of which is on the next two preceding ones. Habitat, Wabash river.

P. troostii, Lea.

Shell, carinate on the body-whorl; a few faint striæ on the base. A few are banded, and some have a slight groove on the last whorl. Habitat, Little Wabash and Saline rivers. It is common in the latter stream, and inhabits swift water.

P. subulare, Lea.

Shell acutely elevated, striate, carinate, rather thin; whorls ten to twelve. Common in the northern part of the State. Specimens received from Mr. W. A. Marsh, of Mercer county, are more elongate than those from other localities.

P. lewisii, Lea.

Shell striate on the base, carinate, one or more grooves on the last two or three whorls. It is a larger species than *P. subulare*, and the spire is not as acute. Received from Mr J. Wolf. Habitat, Spoon river.

P. elevatum, Say

Shell carinate on the first few whorls, last one angulate, and differs from *P. lewisii* in size and not having the grooves or sulcations. Habitat, northern part of the State.

A form found in the Kaskaskia river has the whorls flat, and they do not increase in size as rapidly as in the northern specimens. Often when the first few whorls are gone the shell has a cylindrical appearance, white within the aperture, and sometimes has two bands. I have sent this form out as *P. elongatum*, Lea.

P. neglectum, Anth.

Shell white within epidermis yellowish, carinate on the upper whorls, base striate, three banded; a few being without bands. Habitat, Little Muddy Creek, Washington Co. At one place where the current is rapid and running over fine gravel and mud, and shaded by forest trees, they were found in abundance.

Genus Goniobasis, Lea.

G. costifera, Hald.

Shell plicate on the upper whorls, with two or three revolving lines; color, brown or red dish brown; whorls, 7 or 8. This species is common in the creeks of Hardin Co., and differs somewhat in color and size in the different streams, but the specimens are very much alike in form and markings.

There are other species of *Goniobasis* found in the State, and may be other species of *Pleurocera*, but I have seen none of them. Perhaps some of the readers of THE CONCHOLOGISTS' EXCHANGE can give some information of others.

NOTES ON THE UNIONIDÆ OF SOUTHERN FLORIDA.

BY DR. S. HART WRIGHT & BERLIN H. WRIGHT.

Unio Buckleyi, Lea.

This species is a very marked one, and ought not to be mistaken for any other known Unio. It was first found by the late S. B. Buckley, LL. D., in Lake Monroe, Fla., but is quite common in the St. Johns River and its lacustral expansions in South Florida. Mr. Buckley was born and lived nearly all his life near Penn Yan, N. Y. He traveled extensively in the South to study its new plants, shells and animals, and located finally at Austin, Texas. His Unio is peculiar in having the posterior end elongated and pointed, with a great depression of the posterior and dorsal margin, the beaks being far to the *anterior end*, and scarcely elevated, the largest diameter being just below and back of the beaks. The young are smooth and rayed faintly, as are the adults when the epidermis is smooth, polished and like horn. Much confusion has arisen about this species, several other species having been distributed by this name. In some cases a *truncation* is apparent on the anterior margin as in U. Buddianus. Mr. C. T. Simpson has found it on the west side of the State, where it is more cylindrical, and more nearly white, usually being a beautiful salmon. The greatest length is vertically through the umbos, and three-fourths of the width forward.

U. Buddianus, Lea.

Dr. Lea's figure of this species is faulty in showing a long straight dorsal margin. We found it plentiful in Lake Woodruff, and in a few other localities, but never found one just like the figured type, the dorsal margin always being more or less arched, but occasionally approximating a straight line. This too is a species not well known to collectors, and it has been sent out often as U. Buckleyi. It is an *oblong* species, Buckleyi being *oval*, and its length is 50 per cent. of its width. Shell rather thin for its size, usually grayish black, rather flat and truncated before, *above* the middle of the anterior margin.

U. Blandingianus, Lea.

The habitat of Lea's type was not exactly known, having been brought to St. Augustine by some Indians. We found it in Lake Woodruff and in the St. Johns River at Blue Spring Landing. Our specimens are rayed, smooth, and the outline agrees exactly with Lea's type, but Mr. Simpson found specimens in Manatee River, Fla., on the west side of the State, which are much larger, coarser, squamose, and are like Conrad's figure of *U. viricolus*, found in the *same* region. The latter is claimed by Lea, as being his Blandingianus, yet it is more distinct than many of Lea's co-related species.

U. coruscus, Gould.

None of Gould's Florida Uniones were figured, the descriptions of which were published in Latin in the Proc. Bost. Soc. Nat. Hist. The difficulty of recognizing a Unio from the description alone, is well known to conchologists, and this species has been an enigma to collectors generally. The name is *misleading*, meaning columns of light, akin to those seen in the Aurora Borealis. The shell has no such exhibit outside or inside, and is a misnomer. The nacre in perfect specimens is very beautiful being a mixture of copper color and purple, with *flashing* iridescence of purple and orange posterior. It is a *small* species with thick rayless valves, deep cicatrices, heavy dorsal and dental plate, all the teeth short and heavy, highly arched just behind the umbos, and sloping off each way from that point. Pointed behind and rounded or truncate before, epidermis very dark brown, but not "pitch black," with many *close* zones of growth, and generally roughish, homely and *not* polished. The valves are generally badly crowded in the anterior and umbonial region, giving the shape of a scalene triangle, with the right and left angles or ends somewhat truncated, and nearly of the same size. Typical size 1⅜ inches wide, ⅞ long, ⅝ diam. We found it in Lake Ashby, and in Lake Beresford, the latter being the *original* locality. None were more than 1¾ inches transversely. Nearly all the *pretty* shells of central Florida, not exceeding 2½ inches, have been distributed very generally as U. coruscus. Gld., none being genuine.

To be Continued.

NECROLOGY.

At Buffalo, N. Y., Professor Charles Linden, a well-known naturalist, aged 68.

Professor Asa Gray, the eminent botanist and professor at Harvard College for many years, died at Cambridge, Mass., January 30th, 1888, of paralysis, aged 77 years.

At Philadelphia, February 5th, 1888, of asthma, Professor George W. Tryon, Jr., in his 50th year. Professor Tryon was the author of "Structural and Systematic Conchology," the "Manual of Conchology," and many other kindred works, and was at the time of his death, Conservator of the Conchological Section of the Academy of Natural Sciences. A biographical sketch of this world-renowned conchologist will be printed later on in this paper.

Gundlachia Ancylifomis Pfr. in Florida.

CHAS. T. SIMPSON.

In looking over, a short time ago, a lot of small mollusca collected in Florida, and which I have never had time to carefully examine before, I found three specimens of *Gundlachia*, which, when submitted to Mr. Harry A. Pilsbry, of Phila., were pronounced by him to be *G. Ancylifomis*, Pfr., a Cuban species that, so far as known, has not heretofore been reported from Florida. They were found in a small hammock near Palma Sola, in Manatee County. This little hammock, which was the head of a small stream that flowed into the Manatee Bay, was not over ten or twelve rods in diameter, a dense tangle of hardwood trees, vines and shrubbery, with a soil almost boggy. In this little spot I made some remarkable discoveries. I here found *Vertigo milium*, Gould, *Vertigo ovata*, Say, *Carychium exiguum*, Say, and the *Gundlachia*, which, so far as I know, have not been reported from this State, besides *Ancylus fuscus*, Hald., a rare species; a specimen of the new species *Zonites dallianus*, Pils. & Simp., and what is either a young shell of *Zonites cerinoideus*, Anth., or possibly a new species and a very peculiar variety of *Helix auriculata*, Say. The presence of the *Gundlachia* helps to strengthen the theory I advanced regarding the distribution of certain tropical species in a former article.—*Ogallala, Neb., Jan. 31st, 1888.*

Valves.

Mr. E. W. Roper, of Revere, Mass., writes: "Did I write in my last letter of the specimens of *Bulimus acutus*, Mull, alive in my collection? Three out of a lot sent me in 1886, and labelled Corfu, Greece, are still alive in a box, and do considerable crawling around."

Corrections, November Number: Page 68, col. 1, line 17, for "*Valenciennii*, Crosse," read *Valenciennesi*, Crosse. Crosse spelled the name differently from Webb and Van Beneden. Page 68, col 2, line 27, for not English authors," read *most* English authors.

Mr. H. A. Pilsbry, formerly of the Davenport (Ia.) Academy of Sciences, is now connected with the Academy of Natural Sciences, Philadelphia, as Professor Tryon's assistant in the Conchological Section.

Mr. W. W. Westgate, of Houston, Texas, writes: "I have been following Dr. Sterki's advice about collecting small shells, and the result was amazing. I have secured shells so small that I have to use a good glass to see them at all."

Mr. Joseph Anderson, of Muskegon, Mich., writes: "There is a long dock built of slabs, edgings, etc., from the mills, which extends a long distance into the lake at this place. Near the outer end, in about 10 feet of water, a space about 20 feet wide was left, which is spanned by a bridge. It was under this bridge that I found a colony of *Unio alatus*, Say. They were found on the bottom as close together as they could be packed. I dived to the bottom and filled a fruit basket before coming up. Thus I took out about 600, and there are hundreds left. Steamboats are constantly passing under this bridge, causing a strong current to flow through the opening, which led me to think that I would find them in the river, but I have been unable to find any outside of the territory named above. I have found but one locality where *Margaritana complanata*, Say, can be found, but as the bottom is so full of logs and sticks they are hard to get, and after I get them over half prove to be worthless."

The Conchologists' Exchange.

A Publication designed for Conchologists and Scientists generally.

ISSUED MONTHLY

BY

WM. D. AVERELL,

EDITOR AND PUBLISHER

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Editorial Notes.

THE study of Conchology has been too long neglected. Other branches of Nature have made greater strides in popular esteem, owing, no doubt, in great part, to the prevailing superstition that "shells only come from the sea-shore," to the total neglect of those great and interesting families of the land, lake and river, popularly but slightingly known as "snails" and "mussels." The visit to the sea-shore made, and a few shells gathered and placed in the best room at home form the sum total of the knowledge of most people about the noble study of Conchology. What a fallacy to suppose that this is the Alpha and Omega of molluscan usefulness. The ocean's flood and the land it embraces are fairly teeming with mollusks more beautiful in their coloring, and certainly more lasting, than the flowers of the field; more regular in their forms; more cleanly in habitation, and involving no use of acids in their preparation and determination, like the products of the mines and the quarry, interesting as they are, and with a nomenclature the mere study of which will give the student a tolerably clear idea of Latin, one of the most useful of classical languages.

TWO new features have been added to THE CONCHOLOGISTS' EXCHANGE this month, and they are a cover and a free use of the Exchange Column for all subscribers. The first will allow you to omit the advertisements in binding the paper, and, we think you will admit, gives a more finished appearance to it. The second is simply done to facilitate the collection and study of what we regard as the most beautiful, perfect and regular productions of Nature, except the Mammalia.

THE ink is scarcely dry upon the page which records the death of Mr. Andrew Garrett, and now we are called upon to perform the same sad office for Professor George W. Tryon, Jr., Mr. Garrett's friend and co-laborer. The loss to conchology is great and irreparable, but we feel assured that brave and able minds will be found to continue the good work. Professor Tryon's "Manual of Conchology" will be completed, but when and by whom will be announced later.

THE next issue will contain three very interesting articles from the pens of Rev. W. M. Beauchamp, of Baldwinsville, N. Y., Mr. B. Shimek, of Iowa City, Iowa, and Mr. Harry A. Pilsbry, of Philadelphia.

WE are desirous of increasing our circulation and if any person wishes to secure a handsome premium, we will send our Premium List on application.

Young Collectors' Corner.

Distribution of Shells.

BY W. W. WESTGATE.

I read with much pleasure Mr. Simpson's article on "Distribution of Land and Fresh Water Shells in the Tropics." I think shells are also distributed by other means. Henry Walter Bates, in "Naturalist on the River Amazon," speaks thus of pumice stone which he found floating in the river: "A friend once brought me, when I lived at Santarem, a large piece which had been found in the middle of the stream below Monte Alegre, about 900 miles farther down the river. Having reached this distance, pumice stones would be pretty sure of being carried out to sea and floated thence with the Northwesterly Atlantic current to shores many thousand miles distant from the volcanoes which ejected them (I have several pieces of pumice stone picked on the beach of Galveston Island.—W. W. W.) They are sometimes stranded on the banks in different parts of the river. Reflecting on this circumstance since I arrived in England, the probability of these porous fragments serving as vehicles for transportation of seeds of plants, eggs of insects, spawns of fresh water fish, and so forth, has suggested itself to me. Their rounded water-worn appearance showed that they must have been rolled about for a long time in the shallow streams near the sources of the rivers at the feet of the volcanoes before they leaped the water-falls and embarked on the currents which lead directly for the Amazon. They may have been originally cast on the land and afterwards carried to the river by freshets, in which case the eggs and seed of land insects and plants (also shells—W. W. W.) might be accidentally introduced and safely inclosed with particles of earth in their cavities. As the speed of the currents in the rainy season has been observed to be from three to five miles an hour, they might travel an immence distance before the egg or seeds were destroyed."

I think man plays an important part in distributing shells. Some time ago a fruit dealer in this city received a large case of bananas direct from South America. When it was opened a small boa crawled out. (I now have him in alcohol.) S. Jacob, in a little pamphlet "The Student's Aquarium," speaks of finding a "South American copper-head" in the "Narrows," New York Bay, which he thought "had left a fruit vessel at quarantine." Now, if snakes are carried that way, why not shells? Mr. Singley says that "wild ducks, geese, etc., do the distributing." In "Conchologia Cestria" several species of Mollusca are spoken of as being introduced from England, France, etc., viz, *Limax flavus*, Linn, *L. agrestis*, Linn, *L. maximus*, *Hyalina cellaria*, Mull., *Acicula acicula*, Muller.

I have found a species of *Limax* in my greenhouse, which I thought came from West Chester, Pa., in plants which I had purchased there Several years ago I bought some water lilies from Fayette, this State, and planted them in tubs. Not long afterwards I got some from Florida, now my tubs are filled with *Physa gyria*, Say, of a different form from those found here. I do not know whether they came from Florida or Fayette County. While I was in the drug business I found two small Helices in some juniper berries that I was selling. I sent one to Professor Dall, and he marked it thus: *Helix*, young, like *cricetorum*, exotic. I could give other instances, but I think this is enough for the present.

FOREIGN MAILS.

From New York City: Brazil, South America, West Indies; Steamer Advance, Feb. 18th. Bremen, Germany; Steamer Werra, Feb. 18th. South and Central America, via Panama; Str. Acapulco, Feb. 20th. Hayti and West Indies; Steamer Alvena, Feb. 18th.

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Offered.—50 species of inland and 50 of marine shells for other shells. Send your list for ours. JOHN M. HOLZINGER, Winona, Minn.

American, especially Californian, and European shells to exchange for books and papers on botany, conchology, etc., for other specimens. G. R. LUMSDEN, 54 N. Second St., Norwich, Conn.

Fossil and recent shells for shells, sea-curios, etc. GLEN STEARNS, Georgetown, Texas.

Offered.—Land and fresh-water shells from this locality for other shells. Have about 300 of Unio cylindricus, Say; tuberculatus, Barnes; gibbosus, Barnes; rectus, Lam; alatus, Say; verrucosus, Barnes; pressus, Lea; zig-zag, Lea; elegans, Lea; gracilis, Barnes; metanevrus, Raf.; solenifornis, Lea; complanatus, Barnes; cornutus, Barnes. JAMES H. FERRISS, Joliet, Ill.

Curios, stamps and books to exchange. Wanted.—No. 1, Vol. 1 CONCHOLOGISTS' EXCHANGE. F. J. STEBBINS, 11 E. Maumee St., Mich.

Offered.—Land and fresh-water shells for same EDW. D. KEITH, Moore St., Providence, R. I.

Offered.—Botanical specimens for shells if in good condition. No dead shells wanted. T. G. BRINTON, 755 Corinthian Ave, Philadelphia, Pa.

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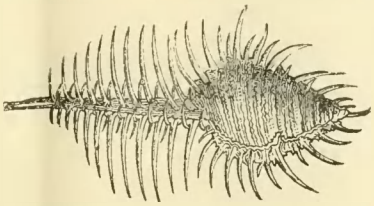

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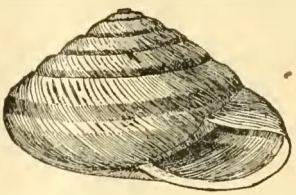

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The Conchologists' Exchange.

VOL. II. CHESTNUT HILL, PHILADELPHIA, PA., FEBRUARY, 1888. No. 8.

THE SHELL-BEARING MOLLUSCA OF RHODE ISLAND.

BY HORACE F. CARPENTER.

Chapter XLIII.

Genus Macoma, Leach, 1819.

This genus contains eighty-five species, one of which inhabits New England, south of Cape Cod, and another from Cape Cod north to Greenland. Our species is the

164.—Macoma fusca, Say, 1826.

Syns :

Psammolia fusca, Say.
Sanguinolaria fusca, Con., Gould, DeKay, Migh., Stimp.
Tellina fusca, Phil.
" Grœnlandica, Beck.
" solidula, Pult., Hanley, Midd.
" zonata, Dill.
" rubra, DaCosta.
" Balthica, Linn, Phil.
Macoma fusca, Tryon, W. G. Binn., Dall., etc.

Shell thin, compressed, ovate-orbicular, subequipartite, rounded before and narrowed and a little pointed behind; beaks small, ligament external; there are two unequal parallel teeth in each valve, the large one grooved. Color, variable, according to locality. Length, one inch; height, four-fifths; breadth, two-fifths.

Linnæus, in 1767, in his Systema Nat., page 1120, described a small rose-tinted shell which he called Tellina Balthica Most of the above synonyms are probably of his species. It might or might not be our species which he described, and not being certain, we adopt Say's name, as next in order of time, and as we know just what species he meant by his description in Jour. Acad. Nat. Sci., Phila., V. 220, 1826. It inhabits from Georgia to Greenland. It is one of the most common species in Rhode Island. Dead specimens can be seen at all times at Field's Point, and sometimes even as far up as Red Bridge, on the Leekonk River. It lives in sand or mud, just below the surface, near low-water mark. They are found on all our shores, but most abundantly in the Barrington and Warren Rivers. In those slimy, muddy, treacherous spots, where every step brings to the surface bubbles of carburetted Hydrogen gas, from the gradual decomposition of vegetable matters, they are as black as ink; in the inlets of salt marshes, and near where fresh water empties into the bay, they attain their largest size; these specimens are quite thick and are covered with a dark, rusty epidermis in clean, quiet sandy places, or showing through their semi-transparent epidermis the tints of lemon or of rose.

FAMILY PETRICOLIDÆ.

This group consists of four genera and about fifty species. They are mostly borers in clay or soft rock, and are irregular in form.

Genus Petricola, Lamarck. 1801.

There are thirteen species, one of which inhabits the whole Atlantic coast of the United States.

165.—Petricola pholadiformis, Lam.

Syns :

Petricola fornicata, Say, Russell.
" dactylus, Say, Gould.

Shell long, ovate-cylindrical, equivalve, very inequipartite, chalky white within and without;

beaks at the anterior fourth, elevated and inclined forwards; surface covered with numerous lines on the posterior portion, radiating from the umbones; on the anterior portion, and extending nearly to the middle of the basal margin, are several large, sharp ribs, decussated by the lines of growth; teeth, two in each valve, one large and one small one in the right valve, and one large tooth in the left valve, deeply cleft, and a thin elevated one, pointing toward the margin, generally detached in removing the animal from the shell. Length, two inches; breadth, three-fifths; height, four-fifths.

This shell, at first sight, resembles a Pholas, but is distinguished from it by its articulated hinge and by its not gaping widely. It is abundant on all our shores from Massachusetts Bay to Florida and the Gulf of Mexico; local and more rare from Massachusetts Bay to Prince Edwards Island. Its habitat in Rhode Island is from high to low-water mark in hard clay, peat, old logs, etc.

Petricola dactylus, Say, not of Sowerby, Hanley and others, was described as a distinct species in Say's American Conch., 1834, DeKay's Nat. Hist. of N. Y., Binney's Gould second edition, 1870. It is described as being broader and shorter, the ribs less prominent and the radiating lines more numerous. It is also said to inhabit deeper water. It is now acknowledged by Conchologists to be merely a variation from the normal form of P. pholadiformis.

FAMILY VENERIDÆ.

This is a very large family, consisting of many genera and species, a most elaborate classification of which is found in Deshayes' Catalogue of the British Museum. The species are found in all seas, generally in shallow water; they are strong and beautifully colored. They made their first appearance in the Oolite and are now at their maximum of development. Four sub-families are recognized.

SUB-FAMILY VENERINÆ.

There are three genera, two of which are represented in Rhode Island.

Genus Venus, Linn., 1758,

There are 176 species living, and 200 fossil. Of the eleven sub-genera, into which the genera is divided, one is represented in Rhode Island by a single species.

166.—Venus (Crassivenus) mercenaria, Linn.

Syns:

Venus mercenaria, Linn.
Mercenaria mercenaria, Chenu, Dall.
" violacea, Schum, Stimp., Adams, Desh.
" notata, Desh.
Venus notata, Say, Gld., Phil., DeKay.
" præparea, Say, Hanley, Desh.
" obliqua, Anton.
Crassivenus mercenaria, Perkins.

Shell large, thick and solid; surface chalky white with no epidermis; in young specimens the surface is covered with sharply defined concentric ridges; as the shell grows older these become gradually obliterated until the surface is almost entirely smooth; interior pure white, except at the margin where it is usually of a beautiful purple color. Length, four inches; height, three; breadth, two.

An extremely abundant species in Rhode Island, living at and below low-water mark in sand or mud, and known by the name of Quahog or Round Clam. It is an article of food, and from New York southwards it almost entirely takes the place of the common long clam. The purple border of the inside of the valves was used by the Indians for the manufacture of wampum, or circulating medium for money; the white wampum was made from the axis of Fulgur carica and Sycotypus canaliculatus.

Linnæus, in Syst. Nat. ed xii. p. 1131, 1767, named this species, mercenaria. Schumacher, in 1817, separated from the genus Venus, a new genus which he called mercenaria, and as our species falls in that group, its name becomes mercenaria mercenaria. According to the rules of the British Association, specific names should not be made generic. On this account Dr.

Geo. H. Perkins, in the "Molluscan Fauna of New Haven," p. 147, 1869, proposed the name of Crassivenus for this division. We cannot change the specific name, for by so doing we deprive Linnæus of the honor due to him as its first discoverer, and at the same time Schumacher is entitled to his generic name by law of priority, but for the reason above given and to avoid tautology, I think it better to adopt Perkins' genus, although of later date. Contrary to the plan adopted by most Concholigists, I accept Crassivenus as a sub-genus of Venus and reduce Mercenaria to a synonym.

The variety notata was described by Say, in Journ. Acad. Nat. Sci., Phila., 11, 271, 1822, as a distinct species. The shell is less solid, and does not attain the size of mercenaria; the concentric ridges are not so prominent; the surface is not chalky, but shining, approaching a flesh-color, and marked with zigzag flashes of a darker shade on the lower part of the shell; interior of a yellowish white color, without any tinge of purple on the margin and several other minor points of difference. These points are of no value in separating species, as suites of specimens can be arranged, showing all the grades of variation between the most marked opposites; the colored margin is no criterion, as I have young and old specimens having no color, and also those with the whole interior covered with purple, and others with white centres, and the entire margin colored.

To be Continued.

NECROLOGY.

Wm. L. Mactier, Conchologist, at Philadelphia, January 20th, 1888. Mr. Mactier was for a number of years an active member of the Academy of Natural Sciences, of Philadelphia, and also an earnest student and collector.

He was Treasurer of the Conchological Section for twenty-one years, in which he was succeeded by Mr. S. Raymond Roberts, of Germantown, Philadelphia.

BRIEF NOTES ON THE LAND AND FRESH-WATER SHELLS OF MERCER CO., ILL.

BY WILLIAM A. MARSH.

Sub-order Hygrophila.

FAMILY LIMNÆIDÆ.

SUB-FAMILY LIMNÆIDÆ.

Sub-Genus Limnophysa, Fitzinger.

87.—Limnæa reflexa, Say.

Shell fragile, very much elongated, narrow, brownish yellow, translucent, slightly reflected from the middle; volutions six to seven, oblique, wrinkled transversely; spire acute, terminal whirls vitreous; body whorl very much dilated; aperture narrow; labrum with a pale margin, and dusky red or blackish sub-margin. This fine shell is rather common in the Northern States. It is very abundant in all the small lakes of our county, and is also found in some of the larger ponds, in the Mississippi River bottom, but is found nowhere else except in times of very high water, when these shells are carried out of the lakes and then may be found in considerable numbers along the river clinging to limbs of trees and pieces of bark. Swan lake, on the Bay Island, is the place where this fine shell may be found most abundant. From the middle of May to the middle of June is the time to look for this shell. During this period it seems to be in the heighth of its glory. At this time vast numbers of them may be seen feeding on the various kinds of water plants, floating, shell downwards, on the surface of the water. From the middle of June they begin to disappear, burying themselves in the mud.

88.—Limnæa desidiosa, Say.

Shell oblong, sub-conical, whirls five, very convex, the fourth and fifth very small, the second rather large; suture deeply indented, aperture equal to or rather longer than the spire; labrum, calcareous deposit copious, not perfectly oppressed at base, but leaving a very small umbilical aperture. This is our most

common Limnæa, being found along the margins of all our small lakes and Mississippi River bottom ponds, also in all ponds along our small creeks, especially about springy places, and in grassy marshes. One remarkable feature however is noticeable: that the species attains a much larger size in the ponds of the river bottom than it does in the inland ponds, but is the same in other respects. This species puts in an appearance much earlier in the Spring than the other Limnæas. In the early part of May it may be collected in vast numbers about springy places, usually from very small to about half-grown. It can then be found crawling around over the moist ground some distance from the water.

89.—Limnæa zebra, Tryon.

Shell turrited, thin; spire very attenuate; whirls from six to seven, brownish yellow, translucent, irregularly striate, covered with whitish transverse lines or stripes, imperforate; sutures impressed; aperture narrow, elliptical. It usually has from one to three obscure brown lines within the margin of the outer lip. This very beautiful species is found in small ponds along Pope creek, and in the Doak Swamp, in the Mississippi River bottom. "In the latter locality associated with *Limnæa reflexa* Say." It generally begins to put in an appearence about the first of May, and disappears about the latter part of June. I have taken very young specimens of this shell and put them in an aquarium with *Planorbis*, *Physa*, etc. In this condition they grow very much more solid, but attain their growth in a dwarfed condition, not more than half their natural size, and without the pale whitish stripes, which always characterize the species in its normal condition.

90.—Limnæa caperata, Say.

Shell somewhat oval, slightly oblong, light horn color; whirls six; apex acute, covered with numerous minute revolving lines; sutures not very deeply impressed; aperture large, fold of the labium not prominent. This fine shell is very rare here. Seven specimens before me, found on the Bay Island, in 1877, is all that I know to a certainty as ever being found in the county. I know nothing of the habits of this shell. It is probably common in the northern portion of the State. A number of years ago I received a large lot of this fine shell, collected by Mr. H. A. Pilsbry, in Iowa.

To be Continued.

NOTES ON THE UNIONIDÆ OF FLORIDA.

BY DR. S. HART WRIGHT & BERLIN H. WRIGHT.

In Conchology, and especially in the Unionidæ, it is very often difficult to separate distinct species of the same group. This is owing to the very few distinct specific characters which shells have. In the Unionidæ there appears to be a character in the ratio of the altitude (length from base to dorsum) to the transverse or longitudinal axis, which we will represent by "R," in our notes. In individuals of the same species, if not very young, "R" is substantially constant. In co-related species, or in specimens that appear to be the same, if on finding "R" to be clearly of a different value, the assumption may be taken that the species or specimens are *not* the same.

The location of the tip of the beaks, and (when well formed) of the cardinal teeth, is also a character, and in specimens of the same species having nearly the same size or age, is substantially constant. The location of these joints from the anterior end is readily compared, in two individuals supposed to be alike or unlike, by taking the left valves of each, placing the anterior ends of each against the table or desk, one being horizontal and the inside facing upwards, and the other placed upon it, vertically and dorsum downward, will easily show the agreement or non-agreement of the location of the beaks and cardinal teeth. The significance of the specific names of species, we will give and the value of "R."

U. Anthonyi, Lea, Sig., personal name for I. G. Anthony R=.57.

U. aheneus, Lea, Sig., color of bronze, brass, or copper. R=.40.

U. amygdalum, Lea, Sig., shaped like the almond, or its seed R=.70.

U. augustatus, Lea, Sig., narrow, R=.39.

U. arctatus, Con., Sig., a bow or arch. Not in Florida. R=.55.

U. Blandingianus, Lea, Sig., personal name for Dr. Wm. Blanding, R=.65.

U. Buckleyi, Lea, Sig., personal name for S. B. Buckley, R=.50.

U. Buddianus, Lea, Sig., personal name for Dr. B. W. Budd, R=.51.

U. coruscus, Gould, Sig., flashing, glittering, R=.64.

U. cacao, Lea. Sig., Bean of Theobroma cacao or coco, R=.69.

This is found in West Florida. It has a squarish outline, flattish, chestnut brown, thick dental plate, and carina high. A small species.

Unio Cunninghami, B. H. Wright, Sig. Personal name for S. L. Cunningham, the first collector of the species. Size of type 2 by 1⅛ inches. Diameter 1 inch. R=56. Diameter being 90 per cent. of 1⅛, makes it very broad across the back. Epidermis usually a reddish black, shining, smooth above, and striate, and unlike below. Teeth all very heavy, nacre thick, salmon, white or purple. Cicatrices *all* deeply impressed. A *ventral* cicatrix usually is found ¼ or ⅓ inch behind the smaller anterior cicatrix. The posterior slope is very depressed and the umbonial ridge being high, a flattened or almost truncated appearance is given to the area below and behind the ligament, the carina being scarcely observable.

The lines of growth are numerous and close, showing that the shells, though small, are old, the full-grown specimens being about half or less in size than the mature *U. Buckleyi*, Lea, the diameter of which is .64 to .75, to which some persons are inclined to refer it. Its great breadth across the dorsum, small size, heavy teeth, and massiveness sufficiently distinguishes it from *U. Buckleyi* and all others. Habitat Lake Dora, and other lakes in Sumpter county, South Florida. It has a close affinity with *U. coruscus*, Gld., yet it is very distinct.

U. Floridensis, Lea, Sig., name for Florida. R=50.

This is another West Florida species, and in the same waters as *U. cacao*, outline *obovate*, shell thin, light yellow as in the *U. Anadontoides*, very narrow in front, rayless, lateral teeth very long and slender, cardinal teeth very small, width of shell 3 inches. *U. fuscatus*, Lea, Sig. Dark, the color of the posterior slope, R=.53. Found in Black creek, Florida, width 1.7 inches, dark brown, numerous minute green rays, valves *thin*, and *compressed* behind. Nacre coppery. Some confusion exists about this species, other species of about the same size, with copper colored nacre, having been taken for it. *U. Jayanus*, Lea, Sig. Personal name for Dr. J. C. Jay. R=.48. As Lea named this from a pair of unmated valves, there has been some trouble with it since, and is a species not well known. Valves *thin* 2.5 by 1.2 inches, color brown, rayless, lateral teeth long and straight. It has an up-turned nose, some like *U. nasutus*. Habitat Lake Woodruff, Florida. Rather rare.

To be Continued.

We propose to issue the number for March much earlier, or know the reason why; and to that end, have shortened this issue. The articles by the Rev. Wm. M. Beauchamp, Mr. B. Shimek, and Mr. Harry A. Pilsbry, will appear in the next number. Several prominent writers have been added to our list of correspondents, while we cordially extend to all, the privilege of contributing any articles, either critical or descriptive, which will have the tendency to make the literature of Conchology more popular, terse and handy.—[Ed.

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A Publication designed for Conchologists and Scientists generally.

ISSUED MONTHLY

BY

WM. D. AVERELL,

EDITOR AND PUBLISHER

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SUBSCRIPTIONS TO VOLUME II ARE NOW DUE. FOR EXPIRATION OF SUBSCRIPTION SEE DATE ON WRAPPER.

Editorial Notes.

AN adjourned special meeting of the Conchological Section of the Academy of Natural Sciences of Philadelphia, was held at the Academy, on the evening of Wednesday, Feb. 29th, to provide for the continuation of the work of Mr. George W. Tryon, Jr., its deceased Conservator. The following members were present, Dr. W. S. W. Ruschenberger, Director; Mr. John Ford, Vice-Director; Mr. S. Raymond Roberts, Recorder; and Messrs. John H. Redfield, E. J. Nolan, M.D., Benj. Sharp, M.D., Angelo Heilprin, John H. Campbell and Wm. D. Averell. Resolutions of respect (passed at a former meeting) for the late Wm. L. Mactier, a prominent and useful member, who died January 20th, 1888, were accepted and engrossed upon the minutes. That portion of Mr. Tryon's will providing for the maintenance of the office of Conservator, and of the Cabinet, was read, and its provisions accepted. Mr. H. A. Pilsbry, formerly of the Davenport (Iowa) Academy of Natural Sciences, was elected a member and afterwards chosen Conservator Action was then taken towards the continuance of the publication of the *Manual of Conchology*, Mr. Tryon's latest and greatest work, and Mr. Pilsbry was elected to the position of Editor. Reports of the Publication Committee were read, which showed the work, so far as issued, to be in good shape, and the Section obligated itself to the fulfillment of the late Mr. Tryon's contracts with his subscribers, so far as laid in their power. The Section then adjourned until its regular meeting in April.

OUR readers will note a change in the title of the interesting article upon Florida Unios, by Dr. S. Hart Wright and Berlin H. Wright. The descriptions will now cover the Uniones of the entire State, which makes the article decidedly more comprehensive and useful.

PROFESSOR JOSIAH KEEP, the enthusiastic Californian Conchologist and writer, has sent us a very instructive article, which cannot fail to please our young people, and we sincerely trust that this branch of the service will not be neglected in the frantic hunt for heavier game.

WE are at work upon an index for the first volume of THE CONCHOLOGISTS' EXCHANGE, the first number of which we reproduce on the second page of the cover of this number. No. 1 of Vol. 1 was issued on a postal card, in July, 1886, and although it has improved since then, we need the hearty encouragement of every scientist to make it a final success.

TO those who are seeking for a first-class investment, we would say, subscribe to THE CONCHOLOGISTS' EXCHANGE.

Young Collectors' Corner.

CABINET NOTES.

BY PROF. JOSIAH KEEP.

On the table before me is a drawer from my cabinet of shells. This drawer contains a good many species each one of which is carefully labelled. A few of the larger shells have their names marked on some smooth surface, with pen and ink, and lie loose within the light and shallow drawer; those which are an inch or two long are in pasteboard trays, with the name upon a small card: the little shells, however, are securely packed in short bottles or glass tubes. The label is written upon a narrow slip of paper and is placed inside with the shells, and then the bottle is corked. By this arrangement the small shells are secure from dust, cannot be scattered, and always have the proper label with them Besides, they take up very little space in the cabinet, and when they are needed it is easy to remove the cork and produce the shells for careful examination.

For very small shells I use two drachm homeopathic vials, while for larger specimens the small wide-mouthed morphine bottles of the druggist are very useful. Naturalists' tubes are excellent, but are somewhat more expensive than bottles.

The pasteboard trays were made for me at a paper-box factory. They are about half an inch deep, and are of different sizes. A good plan is to have a small size as the standard, and make the larger sizes just two or four times as large. Thus the smallest ones may be an inch and a half square; the next size is of the same width but is three inches long, while the largest ones are three inches square. In this way they pack together very nicely, and as you will naturally use the smallest size, as far as possible. the room is divided very economically.

As to labels, they should give the name of the shell and the locality where it was collected This last information is of particular value, as the name may possibly be changed, but the locality when once determined is a fixed fact.

One of my cabinets is a simple and convenient case, having two rows of drawers which are so made that they may be easily withdrawn and placed on the table. The slats on which the drawers run are about four inches apart, though a few of them are placed at a greater disance to accommodate larger shells. A pair of doors in front, to exclude the dust, completes the case. Such an one can be made by any carpenter for a small sum, and the young collector who is anxious to have a convenient case without much expense may easily obtain his desire.

The shells in the drawer now before me were all found on the coast of California. Their owners lived their little lives in the Pacific Ocean, close to the shore. Some of them loved to burrow in the sand, others clung to the rocks while the waves dashed over them, while a few preferred deeper water where they sometimes anchored themselves to the long stalks of the great sea-weeds. I know something about a good many of the little creatures whose shells are now so quiet and still in this cabinet drawer, for I gathered them myself, and each box or bottle brings up a long story of an early morning walk, or an afternoon ramble, or a tedious search, successful at last, however, and I can almost hear the swish and gurgle and roar of the waves as I sit here in the quiet room. But though I remember how they were living and where they were resting on those same mornings, still there is not one about which I would not like to find out a great many more facts,—where the little mollusk was hatched, how it looked while young, what were its habits, how old it was and why it was in such a place on that morning when I found it at low tide.

Here is one that I particularly love to examine. It is the pretty Purple Olive-shell, *Olivella biplicata*, Sby.

It is about an inch in length, with smooth or polished surface, and its color varies from pure white to a rich bluish purple. After a long search I found them abundantly, at the time of the lowest tides, very early in the morning. The little creatures have a beautiful pearl-col-

ored body, and the mantle when extended forms a triangular plow in front of the shell. A breathing tube rises up between the mantle lobes, and when the little fellow is left undisturbed he quickly plows his way just under the surface of the sand, keeping up a communication with the water above through this elevated trunk.

Here is another shell, one that I found clinging to the rocks, down where the breakers came in wild and high. It is shaped like the bowl of a large spoon. The outside is rough and brown, and moreover it seems to have been selected as a building site by several tiny creatures which unhappily perished at the same time that our mollusk lost his vitality. But the inside of the shell is rich and dark and glossy, and as you look at the long muscle-scar you seem to see a big owl solemnly perched in this snug retreat. The shell is named *Lottia gigantea*, Gray, but, besides its mere name and nature, it tells me a story of the hidden beauties of the sea.

There are two elements of our being which the study of nature is fitted to develop. One is the intellect, to which pure science appeals, and which calmly and critically examines, decides upon and then appropriates the truth as its proper food. The other element is our emotional nature, which rejoices in every revelation of beauty and which links pleasing associations to every natural object in which are found evidences of taste and wisdom and skill. Happy is the young student who learns to unite the two, who never sacrifices truth for sentiment, but whose life grows richer and happier as he gathers and appropriates the wonderful facts of science.

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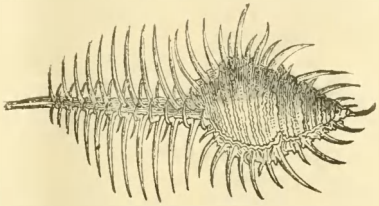

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The Conchologists' Exchange.

VOL. II. CHESTNUT HILL, PHILADELPHIA, PA., MAR. & APR., 1888. No. 9.

THE SHELL-BEARING MOLLUSCA OF RHODE ISLAND.

BY HORACE F. CARPENTER.

Chapter XLIV.

Genus Cytherea, Lam., 1805.

Distribution world wide. There are 150 living species and 80 fossils.

167.—Cytherea (*Callista*) *Sayii*, Conrad.

Syns :

Cytherea convexa, Say, Sowb., DeKay, Hanly, Romer, Gld., Adams, etc.
Dione convexa, Desh., Reeve.
Callista " Dall.
Cytherea Sayana, Conrad.
" Sayii, Perkins.

Shell oval, thin, convex ; surface dead white, chalky ; interior milk white, polished; beaks elevated and pointing forwards ; in front of the beaks is a heart-shaped lunale. Length, one and three-quarter inches ; height, one and one-half; breadth, one inch. Inhabits from New Jersey to Gulf of St. Lawrence. It is not an attractive looking shell ; it appears like a small, dead quahog. Say's species, convexa, described in Journ. Acad. Nat. Sci., Phila., iv, 149, 1824, was a fossil, and occurs in the miocene of Maryland, North and South Carolina, etc. Authors since have called our species by Say's name, supposing them to be the same, but Conrad, in Silliman's Jour. xxiii, 345, 1833, described the recent species supposing them still to be identical and named it Sayana, as he said Say's name was preoccupied. In his "Cata. of Miocene Shells," in Proc. Phil. Acad. Sci. xiv, 575, 1862, while recognizing Cytherea convexa as a miocene fossil, he believes the recent species to be distinct. If the two species are identical, then Mr. Say's name should stand, as convexa is not preoccupied in the genus or sub-genus Callista, although it is in Cytherea. If they are not identical, Conrad's name is the proper one. These shells are not very abundant in Rhode Island ; dead shells are often found on the shores, and live ones are dredged off Rumstick in mud.

168.—Cytherea (*Gouldia*) *mactracea*, Linsley.

Syns :

Astarte mactracea, Linsley, Gould.
Gouldia " Dall., Binney, Tryon.

Shell small, quadrant shaped ; apex acute; anterior margin a little concave ; basal margin rounded ; surface with fourteen concentric valves and striated between the waves by regular, minute, radiating lines. Color pale yellowish green, with darker shades in fine radiation, Length and height, each one-quarter inch ; breadth, one-tenth.

This species was described from a single valve, found in the stomach of a haddock, at Stonington, Conn., by Rev. James H. Linsley, in Silliman's Jour., xlviii, 275, 1845, (name only), and by Dr. A. A. Gould, in the same journal, 233, Sept. 1848. Since dredged in New Bedford Harbor (Prime & Stimpson). Huntington and Greenport, (C. Smith). Prof. Verrill says : "Florida and northern shores of the Gulf of Mexico to Cape Cod. Common, living and of large size, in Vineyard Sound and Buzzard's Bay, especially at Wood's Holl, 3 to 10 fathoms." It has not yet been found in Rhode Island.

SUB-FAMILY MEROEINÆ } Not represented in the U. S.
SUB-FAMILY TAPESINÆ }

Sub-family Dosiniinæ contains four living genera and four fossil, represented in New England by one species.

169.—Tottenia gemma, Totten, 1834.

Syns :

Venus gemma, Totten, Gld., DeKay, Wood, Sby., etc.

Gemma Totteni, Stimp.
Cyrena purpurea, H. C. Lea.
Gemma gemma, Desh., Chenu, Adams, Dall., etc.
Tottenia gemma, Perkins.
Venus Manhattensis, Prime.

Shell small, nearly circular, beaks central, slightly elevated; surface shining, covered with very minute concentric lines; color white, the posterior portion purple inside and out. Length, three-twentieths of an inch; height, one-eighth; breadth, one-sixteenth. Inner margin crenulated. Inhabits from South Carolina to Labrador.

This shell seems to combine the hinge of a Venus, the external appearance of a Circe and the deep angular mantle bend of a Dosinia. Although the first settlers observed this curious little gem and sent home specimens of it to England, no one seems to have taken the trouble to describe it, until Col. Joseph G. Totten, finding it at Newport, R. I., gave a description of it in Silliman's Jour. xxvi, 367, 1834, under the name of Venus gemma. Deshayes, in 1853, Catal. Brit. Mus., separated the genus Gemma from Venus. The same objections to this name exist as those given under Venus mercenaria. Dr. Perkins, in the "Molluscan Fauna of New Haven," proposed the Genus Tottenia, which I have used in this work.

The variety Manhattensis was found near Hell Gate, N. Y., by Temple Prime, who described it as a new species in Ann. N. Y. Soc. Nat. Hist., vii, 482, 1852. He made it a new species on the ground that the interior of the shell was white and the exterior straw color, and the shape of the shell being more triangular. It is extremely abundant in Rhode Island, and is found in our bay, from circular to triangular through all its grades of shape; some specimens are pure white; others with the purple posterior; same with the anterior and base rose colored and some of a beautiful amethystine purple all over, inside and outside.

FAMILY GLAUCOMYIDÆ.

Absent from our fauna (Asiatic).

(*To be continued.*)

BRIEF NOTES ON THE LAND AND FRESH-WATER SHELLS OF MERCER CO., ILL.

BY WILLIAM A. MARSH.

91.—Limnæa humilis, Say.

Shell ovate-conic, thin, translucent. Slightly wrinkled, whirls from five to six, convex, terminal whirl very minute, often absent, sutures indented, labrum covered with a calcareous deposit, umbilicus distinct, color varying from reddish brown to yellowish white. This is a common species throughout the northern tier of States, but rather rare in this country. It is found sparingly in small ponds and wet, marshy places throughout the whole length of our county, especially along Pope and Edwards Creeks, also about springs along all our inland sloughs. Often found associated with *Limnæa desidiosa* and is sometimes difficult to separate from the species. How long this species may remain buried in the mud, I cannot tell, but I have ponds on my land that have remained dry for three years at a stretch and the fourth year filling up with water in which the little *Limnæa humilis* were found apparently as abundant as ever.

92.—Limnæa parva, Lea,

Shell subturreted, thin, smooth, diaphanous, horn color. Subperforated, spire elevated, sutures impressed, whirls five, convex aperture, elliptical. This very minute species I find about perennial springs, sometimes in water troughs, and cattle tanks, very remote from any ponds or sloughs. I have often found this little species clinging to the moss collected on the sides of my horse trough, at my barn well, which is nowhere near any pond or slough. How they happened to be found here remains a mystery to me. I have also found this species in considerable numbers about the margins of small basins on my lands that had been dry for three or four years.

93.—Limnæa curta, Lea.

Shell subturreted, thin, shining, diaphanous, whirls five to six, terminal whirl very minute, body whirl inflated, yellow aperture, small,

elliptical, perforate, columella thickened and reflected over the perforation. I found this shell in 1879, quite plenty in a slough in Green Township, in this county, crawling over flat slabs of coal measure limestone, a short distance below Blaine's coal shaft. At the time I supposed them to be Amnicolas and only secured about forty specimens. I have looked the same locality over many times since and have failed to be rewarded with a single specimen. This should prove a warning to shell collectors. When you have an opportunity to secure a shell do not defer it until a more convenient season, for very likely it will never come.

Genus Physa. Draparnaud.

94.—Physa gyrina, Say.

Shell heterostrophic, oblong, rather solid, whirls from five to six, gradually acuminating to an acute apex, sutures slightly impressed, labrum slightly thickened, spire elongated. This very common and well-known species is known to inhabit a very wide area of country, having a distribution from Vermont to Utah, also found in most of the Southern States. It is our most common species, being found in all the sloughs and lakes of the Mississippi River bottom: along all the creeks that flow through our county above the river bluffs, and also in our small ponds and basins, in many places associated with *Physa heterostropha*. It varies considerably in color, size and texture, being much lighter in color and much more solid in the river bottom than it is above the bluffs. This species is very active both in walking and gliding along on the surface of the waters, shell downward. This very remarkable species puts in an appearence very early in the Spring, and can endure a considerable degree of cold In the month of April I have watched its motions through the ice, sufficiently thick to bear up a man, and have seen it in vast numbers crawling around on the bottom of shallow ponds. Full of motion and life it remains with us much later in the season than Limnæa as I have found fine specimens in October.

95.—Physa heterostropha, Say.

Shell sinistral, subovate, color pale yellow, chestnut brown to reddish wine color; whirls five, body whirl large, the others small, terminating abruptly to an acute apex; aperture large, oval, within pearly, often blackish; lip thickened, sometimes tinged with red. This species has even a much greater distribution than *gyrina*, being found in the British possessions, all over the United States, and even in Mexico. Here it is much less common than *gyrina*, rarely found above the Mississippi River bluffs. It is, however, found in all the lakes and sloughs of the river bottom, often associated with *gyrina*. Both the *gyrina* and *heterostropha* as found here are very variable, yet it is by no means likely that those variable forms are *more than varieties* of those two protean species.

Genus Planorbis. Guettard.

SUB-GENUS HELISOMA. SWAINSON.

96.—Planorbis (*Helisoma*) *trivolvis*, Say.

Shell, pale yellow to light horn color, often chestnut brown, sub-carinate above and beneath, whirls three to four, striate across, with fine raised equidistant, acute lines, forming grooves between them, spire concave, aperture large, lip a little thickened internally, and of a red or brownish color; vaulted above, umbilicus large, exhibiting the volutions. This species probably inhabits all North America, as far south as Mexico, and of course throughout this vast extent of country presents many variations. The typical form is not very common in our county, but seems to be found rather sparingly in all stations where there is water.

To be Continued.

NOTES ON THE UNIONIDÆ OF FLORIDA.

BY DR. S. HART WRIGHT & BERLIN H. WRIGHT.

Unio granulatus, Lea, Sig., little grains, R=56.

Shell thin, about an inch long, and resembles *U. parvus*, Bar. On the beaks, and about ¼ inch out, there are several concentric undulations or granules, giving the appearance of folds. Epidermis dark olive, generally rayless and generally sulcate in front. Found in Manatee River, on the west coast of Florida, by Mr. C. T. Simpson. An Alabama shell.

Unio Jewettii, Lea, Sig., personal name for Col. E. Jewett, R=58.

Shell oblong, smooth, rather inflated, very inequateral; rather thin, brownish; faintly rayed with distant marks of growth. The epidermis is scaly, like that of *U. Blandingianus* and *obesus*. The posterior slope is wide and raised into a sharp carina, which descends towards the beaks. Nacre white, with salmon near the margin. Lateral teeth very long, lamellar; cardinal teeth small. Lake Woodruff and Lake Beresford, Fla.

Unio Kleinianus, Lea, Sig., personal name for J. T. Klein, a Prussian naturalist, who died in 1759, R=75.

Shell nearly oval, plicated irregularly between the lines of growth; color dark brown, polished. Posterior slope large, with a high abrupt carina. Umbonial ridge angular. Beak inflated, posterior margin truncated, cavity deep, nacre white. Habitat, Suwanee River, Fla.

Unio lepidus, Gould, Sig., elegant, R=54.

Shell elongated, ovate, thin, ventricose, very inequilateral, oblique: disc olivaceous, scarcely radiated; umbos tumid. Anterior margin rounded, posterior margin arcuate; cardinal teeth erect, lamellar, fimbriated; lateral teeth straight, acute Nacre silvery white, iridescent transverse. Axis 2¾ inches long. Lake Monroe, Fla.

Its affinity is very close to *U. trosculus*, Lea, but is *larger*, more *fragile*, and cardinal teeth more compressed.

Unio minor, Lea, Sig., little, R=92.

The largest specimens we find are 1.3 inches wide, .8 long, and .56 diameter. Shell elliptical when mature, and obovate when young; very inequilateral; inflated below the umbos; nearly black or olive-green above, not polished, finely striated, with transmitted light a yellowish brown color is noticed. Faint rays are sometimes seen. The back view is that of an acute isosceles triangle, like that of *U. decisus*, Lea. Umbonial ridge nearly obsolete; cardinal teeth not bifurcate, many pitted. A distinct cicatrix (the third) may be seen on the side of the front portion of the cardinal teeth. This character is peculiar, and is seen in *U. trosculus*, Lea, in nearly the same position. No other North American species of Unio, it is believed, will show such a cicatrix. Habitats Lake Woodruff, Lake Beresford, and found by Mr. C. T. Simpson, near Manatee River, on the west side of Florida.

U. modioliformis, Lea, Sig., like the Modiolus in outline, which is a genus of marine bivalves, so named from their resemblance to a small drinking vessel of the ancients, R=.56.

Shell smooth, obovate, very narrow in front, broadly rounded behind, and sometimes slightly emarginate on the basal margin, inflated, thin, translucent, brown, grayish-black, or lutescent. Rays usually present and mostly on the posterior half. Lines of growth many and close. Nacre thin, cream color or white, mingled with purple. The lateral teeth are slender, long and almost on the very margin of the dorsum. This is a South Carolina species, but we found it in Lake Beresford, and elsewhere in Florida. Lea gives this shell as a sample of the *obovate* form in page xxvii of the Introductory Chapter of his Synopsis, and yet he classifies it with the ovate shells on page 44. L. C. 4th Edition. His type was 2.7 inches transversely. We have not found any as large as that, but have specimens, apparently mature, much smaller.

(*To be Continued.*)

Prof. Faber, of Germany, has invented pencils for writing upon glass, porcelain and metals, in red, white or blue The pencils are made of four parts of spermaceti, three of tallow, and two of wax, to which he adds six parts of either red lead, white lead, or Prussian blue, according to the color desired.

RECOLLECT that on and after May 1st, 1888, all new subscribers, and all old subscribers renewing their subscriptions, will receive a choice of three premiums, viz: 1st, 25 cents worth of Choice Shells; 2d, a free copy of Berlin H. Wright's New Check List of Fresh Water Bivalves of North America; 3d, a free copy of D. D. Baldwin's Land Shells of Hawaiian Islands.

LYOGYRUS, GILL, AND OTHER AMERICAN SHELLS

BY H. A. PILSBRY, PHILA., PA.

The genus *Lyogyrus* was established in 1862 for the single species *Valvata pupoidea* Gld. Its distinctive characters as stated by Mr. Gill, are found in the elongated form and last whorl *loose from the preceding*. From this last character the shell receives its name, *Lyo* (*luo*) meaning loose in the Greek. I mention this in order to correct a false etymology, *Liogyrus*, that has found its way into print.

This group has been referred to *Valvatidæ* as a subgenus of *Valvata* by Binney, Tryon, Fischer and others who have treated of it. Upon examining specimens in the Academy collection recently, I ascertained the dentition to be Amnicoloid. The operculum is multispiral, and similar to that of *Valvata*. These peculiarities are sufficient to give generic rank to the group, which may be placed next to *Amnicola* in the system. Tryon in 1883, and Fischer in 1885, referred *Heterocyclus*, Crosse, to this genus. It is hardly worth while to speculate upon this point until the dentition of the new Caledonian form is examined.

A single species, *L. pupoides*, Gld., is known. The form recently described as *L. Lehnerti* has no affinity with the present genus, but is simply a monstrosity of *Amnicola*, possessing paucispiral operculum and other characters of that genus. Such distorted shells are of not infrequent occurrence, and their characters having no constancy, *not even varietal* rank can be given them.

Although American Conchologists have not been finding "new species" of fresh water shells in the Eastern States for the last decade or two, Continental writers, with delicious coolness, continue to describe "novelties" from Massachusetts, Maryland, and other well-known localities.

In regard to another late edition to the nomenclature of U. S. shells, we may note that in place of *Triodopsis Harfordiana*, W. G. Binney (preoc in *Helix*), Mr. Tryon, in Sept. 1887. proposed the name of *H. Salmonensis*. This will of course take precedence over the name *H. commutanda*, Ancey, 1888.

Another of these "new species" is the *Valvata mergella*, Westerlund, described last year from Alaska. This is nothing more than the striate variety of *V. sincera*, Say. The species frequently in the north exhibits strong rib-like striæ; and indeed the names *V. striateæ*, Lewis, and *V. Lewisi* Currier, were applied to this very form.

The fact that the nomenclature of our American shells is becoming so over-burdened with synonyms will perhaps justify me in offering a few additional remarks on useless generic and specific names recently proposed.

In an article in *Le Naturaliste*, in which certain of Mr. H. Crosse's genera are rudely handled, Mr. C. F. Ancey, proposes for the *Physa* ("*Paludina*") *scalaris*, Jay, the subgeneric name of "*Thompsonia*." And, *scalaris* being preoccupied in *Physa*, changes the name of the species also, so as to stand *Physa* (*Thompsonia*) *carinifera*, Ancey. We will now analyze this result. That this Floridan species is not a *Physa* was long ago recognized by one of the foremost of American Conchologists, who, in an admirable revision of the *Limnæidæ*, placed it in the exotic group *Ameria*. From a study of alcoholic material and very numerous specimens of the shells, I find that the real position of the species is in *Planorbis*, and that some of its varieties are exceedingly close to the *Planorbis Duryi*, Wetherby. We may consider *scalaris* to be a lengthened form of the section of *Planorbis* known as *Helisoma*. So much for the generic reference. In view of these indisputable facts, *Thompsonia* becomes a synonym of *Helisoma*. But even if it were distinct, we could not use the name, because it has long been in use in Zoölogy for a universally accepted genus. And since, so far as I can ascertain, *scalaris* is not preoccupied in *Planorbis*, that name may still stand for the species, with *carinifera* as a synonym.

Academy of Natural Sciences, Feb., 1888.

Prof. Cattell, of the University of Penna., read a paper recently before the Aristotelian Society, at London, on "The Psychological Laboratory at Leipzig." The paper appeared in January *Mind*.

MARGARITANA HILDRETHIANA (LEA.)

BY B. SHIMEK, C. E., IOWA CITY, IOWA.

Many of our species of *Mollusca* are considered rare simply because, seeking secluded or almost inaccessible places, they are seldom found by those who are unfamiliar with their habits.

Judging from the notes which have come under the writer's observation, as well as from his own experience, *Margaritana Hildrethiana* (Lea) is one of these species. During the Summer of 1887 this species was found in such numbers, and under such peculiar circumstances, in the Iowa River, Iowa City, that a note of it may be of interest.

Living specimens of this species were first discovered after the great overflow of the Iowa River, in 1881, when one of our mill ponds was drained by a washout. These specimens were found burrowing in the mud under large stones in such a position that to get them it was necessary in most cases to remove the stones. Careful search at different times after this brought nearly 200 specimens to light, which was considered a very large set.

During the past Summer, however, a search on the rocky bottom of the Iowa River, west of the city, was rewarded by the discovery of several thousand specimans of this species in good condition and of all sizes. Nearly all of these specimens were found in quiet water burrowing *under* large slabs of limestone in soft mud, so that to secure the specimens it was necessary to turn the slabs over. Some conception of their abundance may be found from the fact that under a single slab measuring 16 by 18 inches, *three hundred and twenty-four* specimens were found! It may be remarked that the river was very low during the past year, and the place was thus made easily accessible. No doubt the species exists under like conditions in other localities, and this note is offered with the hope that it may lead to its discovery in like abundance where now it is considered rare.

January 25, 1888.

NOTES ON AMERICAN SHELLS.

BY REV. WM. M. BEAUCHAMP.

The various notes on American shells in the CONCHOLOGISTS' EXCHANGE, are becoming of great value, especially some of those on the Unionidæ, on which the average collector finds it more difficult to get reliable information than on any other. It would be a real boon if the CONCHOLOGISTS' EXCHANGE could give serviceable descriptions of the species of this great group. Our difficulty is the incessant variations in all land and fresh water shells in America; a difficulty which I think Mr. Ancey hardly appreciates. I have always found *U. pressus* (Lea) a dark green shell with rays, but Mr. Benedict, of Syracuse, N. Y., has given me some from Jefferson County, N. Y., which are orange color and without rays. I have *U. complanatus* (Sol.) so different in form, size, and color, that they would certainly have been called different species had they been found far apart. A radius of five miles will not allow of their separation. Yet a highly alated specimen from Onondago Lake agrees with no description, and a long compressed specimen, with beaks nearly terminal, from the Erie Canal, seems widely separated from the short, swollen valves of some neighboring streams.

Helix albolabris (Say) varies more than many suppose. The shell may be thin or thick, dentate or not, even in the same locality, but the adult specimens that I have collected at the Thousand Islands of the St. Lawrence, and the Thimble Islands of Long Island Sound, are more elevated than, and about half the size of, the normal shell. In the same situations *H. thyroides* (Say) is small. *Melantho decisus* (Say) varies greatly in adjoining waters, and the same thing is true of many shells.

Some years ago I announced the discovery of *Bythinia tentaculata* (Lin.) at Oswego, N. Y., and soon after found it sparingly in the Erie Canal at Syracuse. It has now become the most abundant shell in the canal in that vicinity. I collected, last Spring, on a gravelly bottom in the canal, favorable to *Goniobasis Virginica* and *livescens*, but found only dead shells of these, while every stone was occupied by the

Bythinias. I think they devoured the food of the others, and so starved them out. The American shells in this way were yielding to foreign invaders. The latter thrive here and better specimens can now be had in New York than in Europe.

Though *Carychium exiguum* (Say) belongs to low lands, I have found it at the base of lime-stone cliffs, and other shells may as unexpectedly occur.

A NOTED SCIENTIST DEAD.

GEORGE W. TRYON, JR., THE EMINENT CONCHOLOGIST, AND HIS WORK FOR SCIENCE.

George W. Tryon, Jr., whose death occured on Sunday afternoon, February 5th, 1888, was, since the death of Mr. Lea, the most prominent conchologist in this country, if not in the world, and his loss will be severely felt, not merely in this city, but wherever natural history is studied.

He was the son of the well-known gunsmith of this city, Edward K. Tryon, and was born in the Northern Liberties, on Green Street, between Front and Second, May 20, 1838. His education was gained at Friends' school, and at an early age he engaged in business with his father and brother The lack of collegiate education he amply made up in later life by private study. His early years were devoted assiduously to his business and to his studies, and his attention having been concentrated on natural history, and especially on the study of shells, he withdrew in 1867 from business in order to devote himself solely to his favorite pursuit. A man of untiring energy and perseverance, he soon became eminent in this domain of science. His first paper was published in the proceedings of the Academy of Natural Sciences for 1881, under the title "On the Mollusca of Harper's Ferry, Virginia" In 1865 he established the "American Journal of Conchology," of which seven annual volumes were issued. To this, and to the proceedings of the Academy he contributed numerous papers, numbering at the end of 1873 no less than 64 contributions to this favorite science, all showing characteristic accuracy of detail and patient research. In addition to these papers he also issued a Bibliography of American Writers on Conchology in 1861; a "Monograph of the Fresh Water Univalve Mollusca of the United States," in continuation of Haldeman's work on the same subject; a "Synonymy of the Species of Strepomatidæ," in 1865; a "Monograph of the Terrestrial Mollusca inhabiting the United States," 1866; an "American Marine Conchology," 1873; the third volume of the "Land and Fresh Water Shells of the United States," published by the Smithsonian Institution, and a "Structural and Systematic Conchology," in two volumes, issued in 1883. The latter is a magnificent work, profusely illustrated, but was only preliminary to the crowning work of his life, which, unhappily, he has been unable to finish. This was his "Manual of Conchology, Structural and Systematic," of which the first volume appeared in 1879, and of which nine volumes of the first series, on marine shells, and three of the second, on land shells, have been issued. It is no exaggeration to say that this is the most extensive systematic work on any branch of natural science which has yet appeared in the United States. The amount of labor involved in the preparation of such a monograph can only be appreciated by those familiar with the vast collections at the Academy of Natural Sciences, which formed its basis and the ever-increasing literature of conchology, with which it had to keep pace. Four lithographic artists and ten or twelve colorists were constantly engaged in the preparation of the beautiful illustrative plates, while the author's entire time was devoted with indefatigable industry in the preparation of the regularly issued text. The reliability of the work was at once recognized on the appearance of the first number, and it is gratifying to be able to state that the enterprise met with an encouragment which was most gratifying to the author, and stimulated him to continual exertion.

But his literary industry did not prevent him from serving the Academy of Natural Sciences in many other ways. Elected a member of the Academy in June, 1859, he was conservator of the Conchological Section from the latter's formation in 1866, and was Secretary of the

Board of Trustees of the Building Fund of the Academy, to which he contributed $3000. He was curator of the Academy from January, 1869, to July, 1876, this period covering the time when the institution was removed from Broad and Sansom to its present location. Much of the labor and responsibility of this removal rested on Mr. Tryon, who gave up his whole time to the work. It is impossible to enumerate all the services for which the Academy is indebted to Mr. Tryon's self-sacrificing spirit. His greatest service was undoubtedly given to the branch of science to which his whole life was devoted. On the upper floor of the Academy museum is arrayed a collection of shells, which is stated to be one-third larger than that of the British Museum, the only other collection with which it can be compared. This collection was largely the gift of Mr. Tryon, and its beautiful arrangement is wholly his work. As the visitor passes along the rows of cases, which seem endless, he sees displayed before him a representation of the conchology of the world. Scarcely a known species of all the tens of thousands described is missing, and the arrangment is such that any particular species may be found at once with its congeners about it. The library of the Academy has recently been described in these columns. Speaking of this particular branch, the article said: "On conchology the library contains, it is believed, every important title ever published on that subject. The collection has been very much increased by George W. Tryon, Jr., who gave his own valuable library, and has kept up full knowledge on the subject by his important work. "The Manual of Conchology," which has exhausted the bibliography of the subject.

Mr. Tryon was also well known in musical circles, He edited for Lee & Sheppard a pamphlet series of operas, which is very popular, and essayed on several occassions original music work, including an opera.

Mr. Tryon's death was very unexpected, and appears to have resulted from heart failure. He was seized about a week ago with what appeared to be an attack of asthma, from which he seemed recovering, when he was again suddenly attacked, and died on Sunday afternoon.

—Phila. Public Ledger, of Feb. 7th, 1888.

BELL TAPS.

THE Rev. Hiram C. Hayden, a graduate of Amherst, has been chosen President of Adelbert College.

HARVARD receives Dr. Asa Gray's copyrights and collections of photographs.

MR. JABEZ P. PENNINGTON, of Newark, N. J, and a graduate of Princeton, Class of '23, died March 27, aged 86.

MR. ANDREW LANG, has been chosen for the Gifford Lectureship at St. Andrew's University, Edinburgh.

HON. C. W. WOODMAN, a prominent graduate of Dartmouth College, died recently, aged 78.

RICHARD E. KEMBLE, the oldest living graduate of Columbia College (Class of '18), died recently, aged 88 years.

PROF. N. E. CROSBY, of Columbia College, recently returned from Greece, where he has been for a year or more in learning the modern Grecian tongue.

A. AUGUST PORTER, who died March 15th, was an Amherst graduate, and gained prominence for his vigilance as U. S. Consul at Clifton, Ontario, during the war.

THE Philadelphia Social Science Association will soon issue a monograph on *Chairs of Pedagogics in our Colleges and Universities*, by Prof. E. T. James, of the University of Pennsylvania.

MRS. LUCY M. MITCHELL, who died in Berlin, March 10, was the author of *History of Ancient Sculpture*, (New York. 1883) had gained part of her education at Mount Holyoke Seminary.

THREE names, well-known in the United States, are mentioned in connection with the vacant Chair of Botany in the University of Edinburgh: viz.: Professors Balfour of Glasgow, McNab of Dublin, and Traill of Aberdeen.

PROF. JEREMIAH TINGLEY, of Allegheny College has been chosen to succeed Prof. Hugo Blanck, in the Chair of Chemistry, at the Western Pennsylvania Medical College.

PROF. VON HELMHOLTZ has been appointed President of the Imperial Physico-Technical Institute, at Charlottenburg, Prussia.

The Conchologists' Exchange.

A Publication designed for Conchologists and Scientists generally.

ISSUED MONTHLY

BY

WM. D. AVERELL,

Editor and Publisher

☞Correspondence upon Conchology, as well as reliable items of interest concerning the Mollusca, their habits, localities, etc., kindly solicited from all.

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SUBSCRIPTIONS TO VOLUME II ARE NOW DUE. FOR EXPIRATION OF SUBSCRIPTION SEE DATE ON WRAPPER.

Editorial Notes.

SEVERAL communications have been received asking us for our opinion upon what we shall term the Standard of Exchange. What shells to exchange, and how to exchange them to the best advantage, must be determined by the owners, while the number and quality of specimens to be sent must be regulated by the number and quality of specimens to be received; that is self-evident. The relative value of shells in exchange should be determined by their rarity, condition and history. Should a shell be rare it cannot be reasonably expected for a common one. A *Scalaria pretiosa* would not be traded evenly, by a well-informed collector, for a *Purpura hæmostoma*, simply because, as values run, shells such as these are greatly different in price. And so with all shells, concessions should be made and extra specimens sent by the collector offering ordinary shells for rarer ones. A reliable price list will be of great aid in adjusting exchanges. Condition is also a very important preliminary to a trade, as no one wants poor shells, and everybody wants good ones. There are occasions, however, when a poor shell is far more valuable than a good one, simply because of its rarity and value for study. In the case of rare bivalves a single valve is acceptable to many collectors who value true science above mere show and who prefer half a shell to none at all. Therefore, condition, while exceedingly important in exchanging, must depend upon rarity in many cases; while in a moral sense, and everything else being equal, it is both wise and safe to treat your correspondents liberally, and to send them as good shells as they send you. So far as possible shells sent in trade should have the epidermis, and should be free from borings, cracks and scratches. Bivalves should be matched, with hinge entire, and when belonging to the gaping genera, such as Mya, Pholas, Petricola, etc., should have as much of the mantle preserved as possible; teeth perfect, and umbones, unless *naturally eroded*, entire. Univalves should have the spire intact unless *naturally decollated* as in many Melanias, Viviparas, etc.; the operculum should be provided where possible; and in all cases the body-whorl should be entire and *not filed*. By the history of a shell we mean its name and location and other data which is ordinarily placed upon a label. Collectors offering shells with complete and accurate histories can command better trades than those having the material without that advantage. In these days of hurry we all want to save as much time as possible and readily recognize the importance of trading with those having desirable shells, in good condition, and provided with reliable histories.

Young Collectors' Corner.

The Conchologist in Bermuda:

BY J. MATTHEW JONES.

Each year, when the Autumn days return, and the sear and tinted leaves fall before the chilly blast, how often do we sigh in memory of "the days of auld lang syne" when the pleasant balmy breezes of the "still vex'd Bermoothes" kindly fanned us as we roamed along the coral strand, or traversed the half-submerged reef, laved by the tepid waters of the Gulf Stream, without whose aid those fair isles would not have been. Yes, if the conchologist could only command the wild bird's wing and flit from the rude north to the gentle south at his own sweet will, one flight would assuredly be to those dear old ocean isles where many a happy day was spent bagging the numerous specimens now stored away among our many treasures and valued more highly than purest gold.

Perhaps no locality in the wide world could present a more charming and interesting field to the conchologist, or perhaps we should say the general marine zoologist, than the Bermudas, for apart from the consideration that the position of the place is so remote from any other terresterial formation, the chances of obtaining by thorough search, extremely rare and in several cases entirely new forms gives a smack of excitment to every day's investigations wholly unknown to the collector working on well known and exhausted shores.

First to attract the collector's attention are the Littorinas, here represented by northern forms, whose original habitat was the Caribbean Sea. *L. muricata* and *L. dilatata* are by far the most numerous, while *L. scabra* occurs in some abundance in the mangrove swamps, those sheltered inlets where the curious matted roots of that tropical tree sink deep into the rich mud watered by the flow of each coming tide. *L. ziezac*, although not rare, is yet not common, and *L. mauritiana*, which we think may prove to be but a variety of *ziezac*, is very rare.

The Neritas come next, *Nerita tessellata* being especially abundant. *N. peloronta*, commonly called "bleeding tooth," is not by any means common, and the collector may consider himself lucky if he gets a dozen good specimens in his day's ramble. The mollusca appears to be gregarious, for it is rarely to be found singly, generally two or three together, and sometimes the minute young with them. Numbers of the dead shells of *N. tessellata* are tenanted by hermit crabs, and the little rock pools at low tide are rendered quite animated by the movements of these crustaceans carrying their burdens hither and thither, while the larger hermit crabs occupy the *Turbo pica* shells, and seem to keep away from the reach of the tide, and mounting in some cases even the higher ground of the cliffs, some fifteen or twenty feet above the sea.

Occasionally after a northerly storm, when the bays and inlets become filled with a solid mass of gulf weed (*Sayanum bucciferum*) the floating *Ianthina* of two species *communis* and *globosa* occur in myriads of all sizes, and with them and of the same lovely violet, the oblique *bellela*, of which whole fleets are stranded on the shelving rocks of the northern shore

The Limpets are represented by *Fissurella barbadensis* and *Siphonaria brunnea*, the latter in great abundance adhering to the smooth water-worn shore rocks near high water mark, while the former shelter themselves underneath the tubular rocks or wherever they are not exposed to the force of the raging waters. *Chiton squamosus* occurs in great abundance, lining the smooth water worn sides of the channels and indentations of the shore rocks between tidal marks. Old and young are massed together. The largest I have ever taken measured 5 inches in length by 2 inches, 3½ lines in breadth. It is called "suck-rock" by the natives.

(*To be continued.*)

Editor THE CONCHOLOGISTS' EXCHANGE:

Sir—Thinking it might be of interest to the readers of THE CONCHOLOGISTS' EXCHANGE, I give you herewith the result of one hours collecting at Onset Bay, Massachusetts:

Urosalpinx cinerea, Say,	50	specimens.
Eupleura caudata, Say,	5	"
Fulgur carica, Gmelin,	10	"
Sycotypus canaliculatus, Say,	8	"
Phrontis vibex, Say,	15	"
Tritia trivittata, Say,	50	"
Ilyanassa obsoleta, Say,	50	"
Mitrella lunata, Say,	100	"
Neverita duplicata, Say,	15	"
Crepidula convexa, Say,	25	"
" *fornicata*, Linn,	30	"
Littorina palliata, Say,	25	"
" *littorea*, Linn,	50	"
Bittium nigrum, Stimp,	125	"
Triforis nigrocinctus, Adams,	25	"
Colisella testudinalis, Mull,	3	"
Chætopleura apiculatus, Say,	2	"
Melampus bidentatus, Say,	20	"
Ensatella Americana, Gould,	10	"
Solecurtus gibbus, Spengler,	5	"
Macoma fusca, Say,	25	"
Crassinella mercenaria, Linn,	10	"
Mya arenaria, Lind,	20	"
Argina pexata, Say,	20	"

They were mostly live specimens

Specimens of *Mitrella lunata* were very plentiful upon the sea-weed, from which I collected them by scraping with a small piece of wood, from the sea-weed upon a large flat rock, and thence into a small bottle.

The specimens of *Phrontis vibex* seemed to form a small colony, and were only found in a small space about one foot square, and nowhere else in the bay.

Fulgur carica and *canaliculatus* were very large, handsome specimens, averaging from six to seven inches in length.

I also wish to report the finding of a specimen of *Zirphœa crispata*, Linn, at Newport, R. I., which had escaped the ever watchful eye of Mr. Carpenter.

This is the first specimen of *Zirphœa crispata* which has to my knowledge been found in Rhode Island; they are found at Nahant Beach, Mass., very large and fine; my specimen is a very small one, but perfect in every respect. Length, ½ inch; height, 5-16

Providence, R. I., Ap. 23, 1888. F. C. BAKER.

It is said that Herr Ladewigg, a German, has invented a paper that resists the action of both fire and water. It is composed of 25 parts of asbestos fibre, with from 25 to 30 parts of aluminum sulphate, after which the mixture is moistened with chloride of zinc and thoroughly washed in water. It is then treated with a solution of 1 part of resin soap in 8 to 10 parts of a pure aluminum sulphate, after which it is made into paper in the usual way.

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AN INDEX TO THE "CONCHOLOGISTS' EXCHANGE."

The publication of this magazine was commenced by Mr. Wm. D. Averill, of Chestnut Hill, Philadelphia, in July, 1886. The first number was printed on a postal card. The August number (No. 2) consists of four pages, without pagination, size 5½ x 6½ inches. The September number contains six pages, without pagination. October number contains eight pages, which are numbered, the first being page 11; the last page (18) is blank. November number contains six pages. December number, eight pages and the last page is blank. January and February numbers (1887) each contain eight pages. March and April (Nos. 9 and 10) were printed together as a "double number," which consists of twelve pages. The May and June numbers each contain twelve pages and are a little larger, 5½ x 7 inches. Vol. I, complete, contains 84 pages.

Vol. II, Nos. 1 and 2 (July and August, 1887) each contain 16 pages. September number contains 12 pages, and with this number there was another increase in size to 5¾ x 7½. October and November numbers each contain 16 pages. December number, 12 pages. January (1888) number, 12 pages, *plus* a cover (pp. i–iv) of the same kind of paper. February number contains 8 pages and a cover (pp. i–iv). March and April were printed together, but as one number (No. 9); this contains 12 pages and a cover (pp. i–iv), and this was the last number published. Vol. II, complete, contains 120 pages, exclusive of cover pages. No index to either volume was issued. The "*Exchange*" contains many new generic or subgeneric names, with other important changes in nomenclature, and some new species. The Index herewith given has been arranged to aid conchologists who have not access to a complete copy of the original publication. It has been cut into short pages in order that those who have the *Conchologist's Exchange* may bind this Index with it.—H. A. P. & C. W. J.

INDEX TO GENERA AND SPECIES IN THE CONCHOLOGISTS' EXCHANGE, VOLS. I AND II.

(*To be concluded in September number.*)

INDEX TO CONTRIBUTORS AND TITLES.

Titles in brackets are the general subjects of notes placed under "Correspondence."