

Science News a Century Ago

Methods of Using the Theodolite

BEFORE the Society of Arts for Scotland, on November 28, 1838, Edward Sang, a civil engineer and machine maker of Edinburgh, read a "Notice of an Erroneous Method of using the Theodolite with a Strict Analysis of Various Arrangement of Readers". When conversing with one who had been engaged on the Ordnance Survey, Sang learned of a peculiar arrangement of the readers which existed in some of the instruments used. Expressing the opinion that the method was erroneous, he developed an analysis and submitted it that it might help to remove that blind reliance on the authority of names which was too prevalent. The errors, he said, would not visibly affect maps of counties but they were high enough to render inaccurate determinations of the degree of meridian. In the course of his paper, he said: "Mere opinion has too long held the place of accurate study in the construction of angular instruments. In particular, the question whether the method of repetition or that of frequent readings, be preferable, had been discussed with almost national warmth. Repeated observations were French, single observations were English, as if there be national scientific creeds."

The Botanical Society

At the anniversary meeting of the Botanical Society, held on November 29, 1838, the report of the council showed that 48 members had been elected since the last anniversary and the total number was 98. The number of British plants received amounted to 18,592 specimens, including 1,050 species. The foreign plants received amounted to about 10,000 specimens including about 4,000 species. The distribution of British plants, it was stated, would take place in January, when each member would receive such of his desiderata as were in the herbarium, in proportion to his contribution.

The Royal Society

At the anniversary meeting of the Royal Society on November 30, 1838, the Marquis of Northampton was elected president, while Sir John William Lubbock was elected treasurer, Roget and Christie, secretaries and Capt. W. H. Smyth, foreign secretary. The Copley Medal was awarded to Faraday, the Rumford Medal to J. D. Forbes, and the Royal Medals to H. Fox Talbot and Thomas Graham.

Macroscolides

"THE curious insectivorous mammal called macroscolides," said the *Athenæum* of December 1, 1838, "which inhabits the rocky mountains of the western part of the district of Algeria, has recently been observed by M. Wagner. It inhabits the crevices of rocks, and makes its bed in the underwood of the dwarf palm; it eats the larvæ of insects, grasshoppers and terrestrial mollusca, introducing its rostrum into the snail shells before the animal has time to retreat. It is remarkably gentle, only expressing uneasiness by a low sound, something like a sigh. It raises itself on its hind legs when it hears any sudden noise, and also leaps upon its prey, but never walks solely on two legs like the Jerbra. It disappears in the rainy season, and during the great heat."

Societies and Academies

Paris

Academy of Sciences (*C.R.*, 207, 693-752, Oct. 24, 1938).

D. RIABOUCHINSKY: Supersonic analogy of the electromagnetic field.

L. ROY: Analogy between the forces exerted on currents and magnetic forces.

J. CABANNES: Water of crystallization of gypsum. Examination of a single crystal in ordinary light shows valency oscillations of the molecule H_2O without the complications of liquid water.

M. LUGEON: Geological observations in Antolia.

W. DEBLIN: Kolmogoroff's equation.

G. TZITZEICA: Certain deformations of superior order.

G. PÓLYA: Indetermination of a problem akin to the problem of moments.

S. BERGMANN and M. SCHIFFER: Bounded families of functions of two complex variables in domains with a *surface remarquable*.

G. ROUX: Measurements of the intensity of gravity in Morocco. A Holweck-Lejay pendulum was used.

O. SING-MO: A theorem of Lord Rayleigh [relating to the stability of fluid movements].

L. REINGOLD: Energy study of combustion at constant volume: imaginary and real combustion.

T. DE DONDER and J. GÉHÉNIAT: Internal tensions and the dynamics of the radiating electron.

P. BARCHEWITZ and G. COSTEANU: Absorption spectra in the very near infra-red (6,000-10,000 Å.) of ammonium salts.

B. KWAL: Initiation of an ephemeral electric discharge by ionizing radiation in tubes with plane parallel electrodes.

G. BROOKS: Relation between fluorescence and the chemical constitution of laccol, moreacol and their derivatives. These polyphenols represent a new type of fluorescent body in which fluorescence is connected with the double bond of the C_{16} side-chain.

MME. M. FREYMAN, R. FREYMAN and Y. TA: Absorption spectra in the near infra-red and Raman spectra of ammonium salts.

A. LASSIEUR: Apparatus for the microdosage of carbon in ferrous metallurgical products.

C.-K. LIN: Structure and absorption of benzoylbenzoic acid and its derivatives.

R. DUSCHINSKY: Rotatory power of citrulline; synthesis of the optically active product.

J. FEJFER and M. JAHODA: Double crystal spectrometer with photographic registration, and the measurement of the imperfection of crystals.

J.-P. and P. DESTOMBES: The Albian of Pays de Bray.

P. LESAGE: Researches on the inheritance of acquired physiological characters: precocity. Continuation of experiments with *Lepidium sativum* which maintain early development acquired at a higher temperature when grown at a lower temperature. Similar results were obtained with a dwarf pea.

MLLE. V. KOVARSKY: Is it necessary to re-educate left-handed persons? Examination of 2,500 children leads to the view that left-handedness is a natural phenomenon which does not imply any inferiority, and attempts should not be made to enforce right-handedness.

H. BULLIARD, I. GRUNDLAND and A. MOUSSA : Detection of the phosphorus of supra-renal phosphatides by radio-phosphorus. Thin sections of tissue are allowed to act on radiological film, which shows the area affected by the radio-phosphorus.

E. KAHANE and M. LÉVY : Water-soluble choline of invertebrates : study of the limpet (*Patella vulgata*).

S. NICOLAU : Data on the morphology of the virus of yellow fever and the morphogenesis of the inclusions which it provokes in the tissues.

Budapest

Hungarian Academy of Sciences, October 24.

G. RADOS : Deduced substitution of unitary substitution.

K. SCHAFFER : Finer anatomy of the cerebellum region of the pyramidal path.

A. ZIMMERMANN : Functional structure of the fascia.

F. KONEK : Alkaloid betains (1). The α -betain of chinin and chinidin.

G. ZIMMERMANN : Comparative anatomy and embryology of the omentum.

K. SASVÁRI : Fourier analysis of the crystal structure of AgMnO_4 .

L. BUZA : Dissolution of the blood cell by the leprous bacilli.

I. LIPKA : Zero points of power series (2).

Cape Town

Royal Society of South Africa, October 19.

A. J. H. GOODWIN : Skull thickness and external measurements in relation to capacity. Research detailing the relationship of skull thickness to internal capacity was described. It was pointed out that skull thickness varies from 2.3 mm. average, to 8.3 mm., with a difference in the region of three per cent of capacity for each millimetre of skull thickness. Maximum length, plus width, plus supra-auricular height is employed in relation to skull thickness, to determine internal capacity.

P. J. G. DE VOS : Production of secondary rays in copper by cosmic radiation. Cosmic rays produce showers of secondary rays in any matter traversed. The density of this secondary radiation increases with the thickness of material traversed, reaches a maximum, and then decreases again. A description is given of the reliable counters constructed, a high-voltage source working from the town supply, and a circuit selecting only the coincident discharges of the counter tubes. The thickness of copper under which a maximum of secondary rays occurs can be calculated by means of the theoretical formulæ of Bhabha and Heitler. The calculated and experimentally found thicknesses show good agreement. The absorption of the secondary rays from copper in lead shows the presence of two components of secondary rays having absorption coefficients 0.69 and 0.30 cm^{-1}Pb respectively.

W. G. SHARPLES : A *coup de poing* factory site from the Nieuwveld. A site at Steenkamp's Poort in the Nieuwveld is surprisingly rich in *coups de poing*, in dolerite and lydianite. Associated with them are a number of flakes and points. Many of the *coups de poing* appear to be made from rough fragments of rock. Some are typically Stellenbosch and some typically Fauresmith in appearance. It is suggested that this is a factory site, and that it is an example of Stellenbosch developing into Fauresmith.

Moscow

Academy of Sciences (*C.R.*, 20, Nos. 2-3, 1938).

G. J. KHAJALIA : The theory of conformic representation of doubly connected domains.

S. SOBOLEFF : The Cauchy problem for quasi-linear hyperbolic equations.

S. ROSSINSKI : (1) Permanent conjugated systems and permanent orthogonal systems of the surfaces of rectilinear congruences. (2) Permanent isoclinic systems of the surfaces of rectilinear congruences.

S. G. MICHLIN : Reduction of singular integral equations to the equivalent equations of Fredholm.

S. A. TCHOUNIKHIN : The Sylow subgroups of simple groups.

P. M. RIZ and N. V. ZVOLINSKY : Torsion of a prismatic bar simultaneously subjected to tension.

V. S. IGNATOVSKIJ : Contribution to the grid theory.

N. MALKIN : Propagation of heat in a medium of several layers.

A. I. ALIKHANOV and V. P. DŽELEPOV : (1) Positron spectrum of an active thorium deposit. (2) Positron spectrum emitted by lead on irradiation with thorium C'' γ -rays.

E. KONORSKY : Irreversible and reversible changes of magnetization in ferromagnetics under tension, and mode of increasing magnetic field.

V. I. LIKHOFF and V. I. PAVLOFF : Method for the augmentation of tension of continuous current with the aid of condensers.

M. MARKOV : Non-elastic dispersion of photons about nuclei with pair-production.

J. I. FRENKEL : Mechanism of muscular activity.

V. FEOFILAKTOV and A. ONIŠČENKO : Synthesis of oxyproline (γ -oxyprolylidine- α -carboxylic acid).

V. O. LUKASHEVITCH : Azoxy compounds. Mechanism of their formation during the reduction of nitro-compounds with sodium amalgam.

N. A. SCHLESINGER, I. B. FEIGELSON and A. I. SPIRIAGINA : Solubility of sodium borates in saturated solutions of sodium chloride in the presence of magnesium sulphate.

A. T. GLADYSHEV and J. K. SYRKIN : Equilibrium and kinetics of the formation of oxonium compounds.

D. M. MICHLIN : Hydroxylamine formed in plants in the course of nitrate and nitrite assimilation.

D. L. TALMUD : Structure of protein molecules and their catalytic properties.

S. M. MANSKAYA : Oxidation processes in wine.

P. P. AVDUSIN and M. A. ZVETKOVA : On the 'structure' of pore spaces of arenaceous oil collectors.

DONTCHO KOSTOFF : Abnormal meiotic processes induced by acenaphthene.

R. A. MASING : Increased variability of heterozygotes for a lethal in *Drosophila melanogaster*.

S. M. BUKASOV : *Solanum boergeri* Buk.—a new potato species from Uruguay.

J. V. RAKITIN and P. M. SHUMOVA : Degeneration of potato cultivated in the south.

A. A. YATSENKO-KHMELEVSKY : 'Physiological drying' of beech timber.

N. P. GLINYANY : Vernalization of grain at the time of the embryo formation.

A. N. KLECHETOV : Effect of tau-saghyz seed treatment with the preparation 'granosan'.

I. V. KOZHANTCHIKOV: Role of metamorphosis in the zonal distribution of insects.

B. A. ZENKOVICH: Milk of large cetaceans.

I. I. MOROSOW: Inhibition and recovery of the regenerative processes in the extremities of axolotl.

J. A. VINNIKOV: Growth and transformation *in vitro* of the iridescent portion of the choroid coat (tapetum).

B. I. BALINSKY: Determination of endodermal organs in Amphibia.

V. FOMITCHEV: *Rugosa* corals from the Middle and Upper Carboniferous deposits of the Donetz basin.

A. I. ARGYPULO: Fauna of the Tertiary Cricetidae of the U.S.S.R.

I. A. EFREMOV: Discovery of a Triassic anomodont in the Orenburg province.

Forthcoming Events

[Meetings marked with an asterisk are open to the public.]

Monday, November 28

UNIVERSITY COLLEGE, LONDON, at 5.30.—Prof. Jacques Errera: "Intermolecular Forces and Infra-Red Spectroscopy".*

ROYAL GEOGRAPHICAL SOCIETY, at 8.30.—Miss Freya Stark: "An Exploration in the Hadhramaut and Journey to the Coast".

Thursday, December 1

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE, at 5.—Prof. F. W. Twort, F.R.S.: "The Position of Viruses in the Organic World" (Brown Institution Lectures. Succeeding lectures on December 2, 5, 8 and 9).*

CHEMICAL SOCIETY, at 8.—Discussion on "Aggregation of Ions in Paraffin—Chain Salt Solutions", to be opened by Dr. G. S. Hartley.

Friday, December 2

INSTITUTION OF NAVAL ARCHITECTS (at the Institution of Mechanical Engineers), at 6.—S. S. Cook, F.R.S.: "Sir Charles Parsons and Marine Propulsion" (Parsons Memorial Lecture).

GEOLOGISTS' ASSOCIATION (at University College, London), at 7.30.—Prof. W. W. Watts, F.R.S.: "The Work of Charles Lapworth".

ROYAL INSTITUTION, at 9.—Viscount Samuel: "The Scientist and the Philosopher".

Appointments Vacant

APPLICATIONS are invited for the following appointments, on or before the dates mentioned:

HEAD OF THE ENGINEERING DEPARTMENT of Hendon Technical Institute—H. M. Walton (T.), Education Offices, 10 Great George Street, Westminster, S.W.1 (December 9).

RESEARCH ASSISTANT IN BIOCHEMISTRY in the Imperial College of Science and Technology, Royal College of Science, South Kensington, London, S.W.7—The Secretary (December 10).

SENIOR LECTURER IN CIVIL ENGINEERING in the University of the Witwatersrand—The Secretary, High Commissioner for the Union of South Africa, Trafalgar Square, London, W.C.2 (December 12).

LECTURER IN MATHEMATICAL PHYSICS in the University of South Africa—The Secretary.

Reports and other Publications

(not included in the monthly Books Supplement)

Great Britain and Ireland

Department of Scientific and Industrial Research. Forest Products Research Records No. 26 (Seasoning Series No. 5): Kiln-Drying Schedules. By R. G. Bateson and R. E. Hodge. Pp. ii+21. (London: H.M. Stationery Office.) 6d. net. [411]

University of London: University College. Calendar, Session 1938-1939. Pp. 12+lxvxi+612+13-22. (London: Taylor and Francis, Ltd.) [411]

Machinery Design and the Control of Moth Pests in Factories. Pp. 32. 2s. net. Factory Fittings, Mountings, Appliances and Furnishings, with regard to the Control of Moth Pests. Pp. 40. 2s. 6d. net. (London: British Association of Research for the Cocoa, Chocolate, Sugar Confectionery and Jam Trades.) [711]

Battersea Polytechnic. Report on the Work of the Session 1937-38 by the Principal, being the 45th Annual Report presented to the Governing Body. Pp. 36. (London: Battersea Polytechnic.) [811]

The Journal of the Institute of Metals. Vol. 62. Edited by S. C. Guillian. Pp. 334+38 plates. (London: Institute of Metals.) 31s. 6d. [811]

Metallurgical Abstracts (General and Non-Ferrous). Vol. 4 (New Series). Edited by G. Shaw Scott. Pp. vi+861. (London: Institute of Metals.) £4, including 2 vols. of the "Journal". [811]

Other Countries

Reprint and Circular Series of the National Research Council. No. 108: Third Report of the Committee on Photochemistry. Pp. 156. (Washington, D.C.: National Research Council.) 1.50 dollars. [411]

Bulletin of the American Museum of Natural History. Vol. 74, Art. 7: The Stingless Bees (Meliponidae) of British Guiana and some Related Forms. By Herbert F. Schwarz. Pp. 437-508+plates 52-62. (New York: American Museum of Natural History.) [411]

Proceedings of the Academy of Natural Sciences of Philadelphia, Vol. 90. A Small Collection of Fresh-Water Fishes from Eastern Cuba. By Henry W. Fowler. Pp. 143-148. Description of a New Carangid Fish from New Jersey. By Henry W. Fowler. Pp. 149-152. (Philadelphia: Academy of Natural Sciences.) [411]

New Zealand. Annual Report for the Year 1937-38 of the New Zealand Standards Institute. Pp. 16. (Wellington: Government Printer.) 9d. [411]

Commonwealth of Australia: Council for Scientific and Industrial Research. Bulletin No. 120: Some Effects of Green Manuring on Citrus Trees and on the Soil. By E. S. West and A. Howard. Pp. 36+9 plates. Pamphlet No. 84: A Population Study of the Red-legged Earth Mite (*Hatolydeus destructor*) in Western Australia; with Notes on Associated Mites and Collembola. By K. R. Norris. Pp. 23. (Melbourne: Government Printer.) [711]

Imperial Council of Agricultural Research. Scientific Monograph No. 12: Fungi of India, Supplement 1. By B. B. Mukundur. Pp. iv+54. (Delhi: Manager of Publications.) 1.6 rupees; 2s. 6d. [711]

Indian Forest Records (New Series). Entomology, Vol. 3, No. 11: Entomological Investigations on the Spike Disease of Sandal (3) Heteroptera (Hemipt.). By N. C. Chatterjee. Pp. 213-226. 8 annas; 9d. Entomology, Vol. 3, No. 12: Immature Stages of Indian Coleoptera (24, Curculionidae, cont.). By J. C. M. Gardner. Pp. 227-262+6 plates. 1.6 rupees; 2s. (Delhi: Manager of Publications.) [711]

Southern Rhodesia. Geological Survey Bulletin No. 34: The Geology of the Lower Umfuli Gold Belt, Hartley and Lomagundi Districts. By A. E. Phaup and F. O. S. Dobell. Pp. v+150+12 plates. (Salisbury: Government Stationery Office.) 5s. [711]

Smithsonian Miscellaneous Collections. Vol. 97, No. 7: The Direct-Historical Approach in Pawnee Archeology. By Waldo R. Wedel. (Publication 3484.) Pp. 21+6 plates. (Washington, D.C.: Smithsonian Institution.) [711]

Indian Lac Research Institute. A Note on the Iodine Absorption by Lac and similar Natural Resins and a Rapid Method for its Estimation (Work under United Kingdom Scheme). By Dr. A. Karim and Dr. Dorothy E. Cook. Pp. 10. 2 annas. A Study of the Mechanical and Electrical Properties of some Commercial Standard Lacs (Work under United Kingdom Scheme). By Dr. A. Karim. Pp. 21. 2 annas. Annual Report for the Financial Year 1937-38. Pp. ii+43. Bulletin No. 28: Conservation of the Baisakhi Ber (*Z. Jujuba*) Brood of the Lac Insect, and Possibilities of Effecting Better Returns from Lac Cultivation on Ber. By P. S. Negi. Pp. 14+9 plates. 4 annas. Bulletin No. 29: Contribution to the Study of the Bleaching of Lac. Part 1: The Action of the Chlorine-Bleach on the Resin Constituents of Lac. By N. N. Murty. Pp. 17. 2 annas. Bulletin No. 30: Shellac Plastics. Part 1: Compositions containing Urea. By S. Ranganathan. Pp. 8. 2 annas. Bulletin No. 31: Fluorometric Determination of the Acid and Saponification Values of Lac. By N. N. Murty and H. K. Sen. Pp. 8. 2 annas. (Namkum: Indian Lac Research Institute.) [811]

1587-1937, Hortus Academicus Lugduno Batavus, The Development of the Gardens of Leyden University. By H. Veendorp and L. G. M. Baas Becking. Pp. 218. (Harlem: Ex Typographia Enschedaiana.) 8.60 florins. [811]

Catalogues, etc.

Aeronautik und Meteorologic in Auswahl: Bücher, Zeitschriften, Abhandlungen. (Antiquariatskatalog Nr. 724.) Pp. 32. Reine und angewandte Chemie: Zeitschriften, Sammelwerke, Bücher und Abhandlungen. (Antiquariatskatalog Nr. 725.) Pp. 242. (Leipzig: Gustav Fock, G.m.b.H.)

Dent's Almanack. No. 1, 1938. Pp. 96+16 plates. (London: J. M. Dent and Sons, Ltd.)