

Calendar of Geographical Exploration

March 21, 1699.—Abyssinia via the Nile

A Jesuit, Father de Brèvedent, and a French doctor, Charles Poncet, reached Sennar. They left Cairo in June 1698, went down the Nile to Siout, and then struck across the desert and passed through Dongola to Sennar, reaching the Blue Nile above its confluence with the White Nile. Leaving Sennar, they recrossed the Blue Nile, reached the Gundwa, the headstream of the Atbara, and arrived at the borders of Abyssinia, where de Brèvedent died. Poncet entered Abyssinia, and stayed there until early in 1700, when he returned to Massaua. Poncet's journal gave much information about the regions through which he passed, and especially about their natural history.

March 21, 1871.—Henry Morton Stanley

Stanley's remarkable series of African explorations began on this date with his journey from the east coast of Africa to Ujiji, where he met Livingstone and with him explored the northern shores of Tanganyika. His next expedition, 1874-77, from east to west of Central Africa, resulted in the mapping of the course of the Congo River, in a knowledge of the relation of the Kagera to the Nile, in the discovery of Lake Dweru, and in the solution of many other geographical problems of the region. In 1887-90 he discovered the Ruwenzori Mountains, traced the course of the Semliki River, discovered Lake Edward Nyanza and the great south-western gulf of Victoria Nyanza. Much information about the pygmy tribes of the Congo forest was collected. His journeys outlined the main facts of the sources of the Nile, and completed the work of the earlier explorers of the Nile and of Livingstone and Cameron.

March 22, 1830.—Mouth of the Niger

Richard and John Lander arrived at Badagry, on the Slave Coast of the Gulf of Guinea. They then made their way inland to Busssa, on the Niger River, the journey occupying three months. After careful preparations, they embarked on the river in two canoes and sailed down it to the Atlantic Ocean, thus at last clearing up the course taken by the Niger River. They also found that the Benue River joined the Niger. Their courage in entrusting themselves in such frail barks on an unknown river and in facing the dangers of tropical diseases, hostile tribes, and uncharted rocks, dangers which had already taken toll of many previous explorers, was rewarded by the solution of a problem upon which Mungo Park and Clapperton had worked. It is interesting to note that a 'stay-at-home' geographer, James M'Queen, had fourteen years previously correctly mapped out the course of the Niger on scientific principles, and had proved that it could only terminate in the Bight of Benin.

March 23, 1843.—Middendorf in Siberia

A. T. Middendorf left Turukhansk, went down the frozen Yenisei, and thence over the tundra to the basin of the Khatanga River. He then proceeded northwards to the Taimir peninsula, and, in spite of many hardships, brought back valuable descriptions of the life of the region. Later he journeyed from Yakutsk to the Sea of Okhotsk, crossing the Stanovoi Mountains and exploring the Amur basin as far as Lake Baikal. Middendorf's accounts of the regions he traversed are of great scientific value, especially for the study of the flora and fauna of Siberia.

March 24, 1921.—R. E. Cheesman in Arabia

Major R. E. Cheesman started his exploration of the coast-line of eastern Arabia, near the island of Bahrein, at the Bay of Salwa. The coast between Oqair and Salwa had never been visited by a European, though Burchardt in 1904 passed Salwa on a different route. Cheesman made a route traverse of the coast, accompanied by a sailing boat which carried his chronometer. He was much interested in the ruins of Salwa, which may have been the Phœnician Gerra. In 1923-24 Cheesman explored the desert of Arabia southward from Hofuf, discovering the oasis of Jabrin, previously unvisited. A feature of his work was his record of bird life in the regions which he visited.

Societies and Academies

LONDON

Institute of Metals, March 9.—J. Newton Friend: The relative corrodibilities of ferrous and non-ferrous metals and alloys. (3) Final report. The results of three years' exposure at Southampton Docks. The metals examined included lead, zinc, tin, aluminium, copper, nickel, and various alloys containing iron, chromium, nickel, copper, and zinc. Nickel-copper alloys, particularly the 70:28 alloy, offered great resistance to corrosion. High-grade zinc and tin were slightly more attacked than the less pure metals. Tension, riveting, and cold-working did not appreciably affect the corrosion of nickel-chromium alloy steels, but in every case cracks appeared at welds. Alloy steels resisted corrosion well; they are subject to serious localised corrosion.—O. F. Hudson and J. McKeown: The properties of copper in relation to low stresses. The effect of cold-work, heat-treatment, and composition. (1) Tensile and compression tests under short-time loading. The tensile tests have shown that all the materials tested possess a certain limit of proportionality due to the applied cold-work, and that this limit of proportionality can be considerably raised by suitable heat-treatment. There is a superior resistance to deformation brought about by cold-work and suitable heat-treatment, and also a greater resistance to deformation conferred on copper, particularly at elevated temperatures, by the presence of a very small percentage of silver and also by the presence of tin and silicon.—H. J. Tapsell and A. E. Johnson: The properties of copper in relation to low stresses. The effect of cold-work, heat-treatment, and composition. (2) Creep tests at 300° C. and 350° C. of arsenical copper and silver-arsenical copper. Improvement in resistance to creep at 300° C. and 350° C. is effected by the special pre-treatment of the alloys, and alloys containing 0.072 per cent silver are superior to the silver-free alloys.—R. Seligman and P. Williams: The interaction of aluminium and water vapour. The statement having been made recently that aluminium and its alloys are rapidly attacked by super-heated steam at 300° C., the authors have made experiments and have found that no such attack takes place under the conditions which they define.—F. Bollenrath: On the influence of temperature on the elastic behaviour of various wrought light metal alloys. The elastic properties increase with decreasing temperature, except in the cases of two aluminium alloys with a high silicon content.—D. Hanson and C. E. Rogers: The thermal conductivity of some non-ferrous alloys. Aluminium-copper alloys were tested, also the effect of aluminium, nickel, iron, phosphorus, and arsenic on the thermal conductivity of copper.—A. J. Sidery, K. G. Lewis, and H. Sutton: Intercrystalline corrosion

of duralumin. Partial immersion in a *N*-1 solution of sodium chloride to which 1 per cent (by weight) of hydrogen chloride had been added was capable of producing intercrystalline corrosion consistently in samples of duralumin where a propensity towards this type of corrosion existed. Overstrain in tension increased slightly the tendency towards intercrystalline penetration, but no relation was observed between this tendency and the degree of elongation. In general, the higher the quenching temperature the smaller was the tendency of the material to develop intercrystalline corrosion.

PARIS

Academy of Sciences, Feb. 1.—A. Cotton, G. Dupouy, and M. Schérer: The magnetic rotatory power of blende and the measurement of the fields of electromagnets furnished with perforated pole pieces. Utilisation of magnetic rotations of thin plates of blende for the measurement of intense magnetic fields.—Gabriel Bertrand: Can gold be considered as one of the elements of living matter? Berg has stated that gold is present in the brain of the ox in the relatively high proportion of 14 mgm. per kilogram of dry substance. The author has repeated Berg's experiments with negative results. If the ignition is conducted in a platinum vessel a trace of this metal, but no gold, is found after following Berg's process, but after ignition in silica there is no trace of either platinum or gold.—E. Mathias: Variation of the surface tension of fulminating material as a function of the temperature and molecular weight.—Ch. Porcher and A. Tapernoux: Search for indoxyl (indican) in cow's milk and goat's milk. A criticism of a recent communication by Ch. Hervieux. The thymol reaction for indoxyl derivatives is not trustworthy.—Paul Bouin was elected *Correspondant* for the Section of Anatomy and Zoology.—Th. Anghelutza: A functional equation.—Gaston Julia: The reconstruction of a σ Riemann surface corresponding to a multiply connexe area \mathcal{R} .—Jean Pierre Robert: Riquier's problem and its generalisations.—M. Ghermanesco: Certain systems of linear partial differential equations of the elliptic type.—F. Leja: The domain of convergence of series of homogenous polynomials.—Edouard Callandreaux: The maximum strain in a plane body perforated by a circular hole.—Sonier: Thin rectangular plates submitted to variable forces.—Michel Luntz: The virtual profiles of least resistance.—D. Barbier: The probable periods of visual double stars the orbit of which is still unknown.—Bernard Lyot: The study of the solar corona with the spectroheliograph otherwise than during an eclipse. In a previous communication the author has given an account of how he saw and photographed the green and red lines of the solar corona with a direct vision spectroscope. These experiments have been repeated with two spectrographs of much greater dispersion and with a spectroheliograph. The results described prove that by these methods it is possible to study the green and red lines of the coronal spectrum at any time, and in a more complete and exact manner than during eclipses.—N. Gunther: The Newtonian potential.—A. Schweitzer: The variation of dimensions produced by annealing cold hardened copper.—J. Jaffray: Some properties of vacuum thermocouples. Supplementing an earlier communication, the effect of the variation of the external temperature has been studied and a method of correction worked out.—André Chevallier and Pierre Dubouloz: Intensity measurements in the ultra-violet spectrum by means of photoelectric cells sensitised by sodium salicylate. In an earlier communication the authors have described the application of a potassium photo-

electric cell, sensitised by sodium salicylate, to the study of the ultra-violet. It is now shown that the curves obtained giving the intensity of the fluorescent light as a function of the wave-length agree closely with those obtained by other methods.—Mlle. Suzanne Veil: The action of the electric field on gelatine. The effect of the presence of an indicator. Deformations undergone by gelatine in an electric field correspond with physico-chemical changes in the medium.—P. Jacquet: Study of the tensions in electrolytic copper deposited in the presence of gelatine.—René Pallu: Study of the system $H_3PO_4 \cdot Ca(OH)_2 \cdot CO_2 \cdot H_2O$.—T. Karantassis: The action of hydrocyanic acid on the halides of the trivalent and tetravalent metals. The existence of the compounds $TiCl_3 \cdot 2HCN$ and $AlCl_3 \cdot 2HCN$ is proved.—A. Maille and Renaudie: The transformation of ketones into liquid hydrocarbons. Using silica gel as catalyst, ketones (acetone, propione) gave a mixture of aromatic and unsaturated hydrocarbons with a small proportion of naphthalene and anthracene.—A. Wahl and R. Lantz: The preparation of some new derivatives of β -naphthol.—F. Salmon-Legagneur: β -Homocamphoric acid. A new mode of formation of β -camphor.—Émile André and Charles Vernier: The *d*-ricinoleates of α -phenylethylamine and *l*-ephedrin.—Dalloni: The Silurian grits and intrusive alkaline rocks of the older formations of Tibesti.—André Demay: The fragments of Hercynian overlapping near Vivarais.—Chadefaud: The chondriosome of the green algae.—Mlle. Lucienne George: Observations on *Sorbus torminalis*.—Aug. Chevalier: The places deprived of vegetation in the Sahara and their cause from the point of view of plant ecology.—Friant: The influence of the size of the body on the dental morphology of mammals.—Jules Amar: The hydrothermal coefficient in homeotherms.—René Hazard: The action of sparteine on the inversion by yohimbine of the vasoconstrictor effects of adrenaline.—A. Auguet and J. Lefèvre: Curves of loss and of metabolism as a function of the external temperature in the homeotherm in repose.—A. Policard and A. Morel: The utilisation of the spectrography of lines in histochemistry (histospectrography). A modification of the method proposed by W. and W. Gerlach for which some advantages are claimed.—R. Pussard: A parasitic nematode of *Psylla*.—Ph. Lasseur, A. Dupaix, and M. Grojean: Factors of stability of bacterial suspensions heated to 80° C. The remarkable stability of bacterial suspensions after heating to 80° C., is explained, at least in part, by a decrease in the surface tension of the dispersed medium, an increase of the electric charge, and an increase in the viscosity.—Pilod and Codvelle: The action of metallic copper on the germs in drinking water.

LENINGRAD

Academy of Sciences—*Comptes rendus*, No. 10, 1931.—A. P. Vinogradov: Colorimetric determination of vanadium by the method of phospho-tungstic acid. The method, which is described in detail, is particularly suitable for the determination of vanadium in living organisms.—V. P. Rusakov: Radioactivity of phosphorites and their extracts. The average radioactivity of phosphorites exceeds considerably that of more common soils and rocks. The radioactivity of water extracts from phosphorites is very weak, of the order 10^{-12} per cent of radium. The radioactivity of extracts made by 10 per cent solution of hydrochloric acid is, on the average, of the order 10^{-10} per cent of radium.—V. Milchevskaja-Rutkovskaja: Rubidium (and caesium) in microclines from different localities.—E. Krinov: The meteorite of Staroje Boriskino. Description of a meteorite which fell on April 20, 1930,

65 km. north of Buguruslan.—C. Flerov : Data on the craniology of the family Equidae. Craniological characters of the recent members of the family are tabulated and discussed. The conclusion is reached that they all form one genus, *Equus*, with three subgenera, namely, *Equus*, including the domestic horse and *E. przewalski*; *Asinus*, comprising Asiatic and African wild and domestic asses; and *Hippotigris*, which includes zebras and quaggas.—B. Galerkin : The flexion of thick elastic plates, rectangular and triangular, poised on their contours. A contribution to a solution of the problem of theory of elasticity in the case of three dimensions, with the aid of functions of tension and displacement.

Forthcoming Events

FRIDAY, MARCH 18

ROYAL SOCIETY FOR THE PROTECTION OF BIRDS (Annual Meeting) (at the Middlesex Guildhall, Westminster), at 3.—Chairman: Earl Buxton. Speakers: Viscount Grey of Falldon and J. H. Whitehouse.

GLASGOW CHEMICAL SOCIETY (Annual General Meeting) (at Glasgow University), at 4.—Prof. G. G. Henderson : Publication of Chemical Literature (Presidential Address).

PHYSICAL SOCIETY (at Imperial College of Science and Technology), at 5.—Annual General Meeting, followed by an Ordinary Meeting.—A. S. Rao : The First Spark Spectrum of Arsenic (As II).—J. S. Rogers : The Photographic Measurement of the Absorption Coefficients of Gamma-rays from Radium (B+C).—M. Fahmy : On the Derivation of Maxwell's Equations from the Equations of the Quantum Theory.

UNIVERSITY COLLEGE, at 5.30.—Prof. A. J. Toynbee : The Turks (Lecture).

IRON AND STEEL INSTITUTE (Annual General Meeting) (at Royal Technical College, Glasgow), at 7.15.—W. E. J. Lewis : Notes on Autogenous Welding.

SOCIETY OF CHEMICAL INDUSTRY (South Wales Section) (at Thomas' Café, Swansea), at 7.30.—Annual Meeting.

ROYAL INSTITUTION OF GREAT BRITAIN, at 9.—Lord Rutherford of Nelson : Recent Researches on the Gamma Rays.

SATURDAY, MARCH 19

BRITISH MYCOLOGICAL SOCIETY (London Meeting) (in Botanical Department, University College), at 11 A.M.

MATHEMATICAL ASSOCIATION (London Branch) (at Bedford College for Women), at 3.—F. C. Boon : Teaching the Method of Ratio (Lecture).

ROYAL INSTITUTION OF GREAT BRITAIN, at 3.—Lord Rutherford of Nelson : Discovery and Properties of the Electron (4).

MONDAY, MARCH 21

KING'S COLLEGE, LONDON, at 5.30.—Prof. Julian Huxley : Impressions of Soviet Russia (Lecture).

INSTITUTION OF ELECTRICAL ENGINEERS (Western Centre and West Wales (Swansea) Sub-Section) (at Swansea), at 6.—Prof. J. K. Catterson-Smith : Everyday Uses of Electricity (Faraday Lecture).

INSTITUTION OF MECHANICAL ENGINEERS (Graduates' Section—London), at 6.45.—Annual Meeting.

SOCIETY OF CHEMICAL INDUSTRY (Yorkshire Section) (Annual General Meeting) (at Hotel Metropole, Leeds), at 7.15, followed by an Ordinary Meeting, at 7.45.—Dr. C. J. Smithells : Photoelectric Cells and their Industrial Applications.

ROYAL SOCIETY OF ARTS, at 8.—A. E. L. Chorlton : Oil Engine Traction (Howard Lectures) (3).

TUESDAY, MARCH 22

ROYAL SOCIETY OF ARTS, at 4.30.—Dominions and Colonies Meeting.

ROYAL PHOTOGRAPHIC SOCIETY (Scientific and Technical Group) (Annual General Meeting), at 7.—E. E. Jelley :

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A Cause of Yellowness in Sepia Toning.—S. D. Threadgold : The Measure of Graininess.

THURSDAY, MARCH 24

SOCIETY OF CHEMICAL INDUSTRY (Glasgow Section) (Annual Meeting) (at Institution of Engineers and Shipbuilders, Glasgow), at 7, followed by an Ordinary Meeting, at 7.30.—Dr. C. L. Whittles : The Chemist, the Soil, and the Farmer.

Official Publications Received

BRITISH

Proceedings of the Royal Society of Edinburgh, Session 1931-1932. Vol. 52, Part 1, No. 3 : Calendar of Hume MSS. in the possession of the Royal Society of Edinburgh. By J. Y. T. Greig and Harold Beynon. Pp. 158. 11s. 6d. Vol. 52, Part 2, No. 4 : The Effect of Malnutrition on Roof Structure. By Dr. George Bond. Pp. 159-173+2 plates. 1s. 9d. Vol. 52, Part 2, No. 5 : On the Orthogonal Polynomials in Frequencies of Type B. By Dr. A. C. Aitken. Pp. 174-182. 3d. (Edinburgh : Robert Grant and Son; London : Williams and Norgate, Ltd.)

Annals of the Natal Museum. Edited by Dr. Ernest Wæren. Vol. 7, Part 1, February. Pp. 144+6 plates. (London : Adlard and Son, Ltd.) 15s. net.

Department of Scientific and Industrial Research. Building Science Abstracts. Vol. 5 (New Series), No. 1, January. Abstracts Nos. 1-188. Pp. 36. (London : H.M. Stationery Office.) 1s. net.

Department of Scientific and Industrial Research. Report of the Forest Products Research Board; with the Report of the Director of Forest Products Research for the Year 1930. Pp. vii+52+10 plates. (London : H.M. Stationery Office.) 4s. net.

Proceedings of the Royal Irish Academy. Vol. 40, Section A, No. 5 : Electric Discharge from Water Drops. By J. J. Nolan and J. G. O'Keefe. Pp. 86-98. 6d. Vol. 40, Section B, No. 12 : A Tectonic Analysis of the Mourne Granite Mass, County Down. By Dr. Herbert P. T. Rohleder. Pp. 160-174. 6d. (Dublin : Hodges, Figgis and Co.; London : Williams and Norgate, Ltd.)

Journal of the Society of Glass Technology. Edited by Prof. W. E. S. Turner. Vol. 15, No. 60, December. Pp. 83-101+259-372+353-587+xxvi. (Sheffield.) 10s. 6d.

Reports of the Progress of Applied Chemistry. Vol. 16, 1931. Pp. 748. (London : Society of Chemical Industry.) To members, 7s. 6d.; to others, 12s. 6d.

Ollscoil Na h-Eireann (The National University of Ireland). Calendar for the Year 1931. Pp. viii+306+532+238. (Dublin.)

FOREIGN

U.S. Department of the Interior : Geological Survey. Bulletin 834 : Bibliography of North American Geology, 1929 and 1930. By John M. Niekles. Pp. ii+280. 45 cents. Water-Supply Paper 675 : Surface Water Supply of Hawaii, July 1, 1927, to June 30, 1928. Pp. v+105. 20 cents. (Washington, D.C. : Government Printing Office.)

Scientific Papers of the Institute of Physical and Chemical Research. No. 346 : Hyperfine Structure of Mercury, III. By Kiyoshi Murakawa. Pp. 299-306. 20 sen. No. 347 : Chemische Untersuchungen in der Saponinreihe. Mitteilung 1 : Über das Glucosid von Panax Ginseng C. A. Mey. Von Munio Kotake. Pp. 4. 10 sen. No. 348 : Chemische Untersuchungen in der Saponinreihe. Mitteilung 2 : Über die Saponine von Kalopanax riciniifolius. Von Munio Kotake und Katsuta Taguchi. Pp. 5-11. 15 sen. No. 349 : Carotin and Dihydroergosterol in Green Tea. By Michio Tsujimura. Pp. 13-21. 15 sen. Nos. 350-354 : On the Enzymes of Chickens Sarcoma, by Eiichi Somekawa; Über den Spinnometer und seine Anwendung, I, von Sin-itiro Iwasaki; Über den Spinnometer und seine Anwendung, II, von Sin-itiro Iwasaki; Synthesen von Chalkone Homologues and related Compounds, Part 1 : Methoxy Acetophenone, Methoxy Chalkone and some related Compounds, by Miss Chika Kuroda and Miss Tokiyo Matsukuma; Synthesen von Chalkone Homologues and related Compounds, Part 2 : Some Homologues of Methoxy Chalkone and their related Compounds, by Miss Chika Kuroda and Miss Teruko Nakamura. Pp. 23-76. 60 sen. (Tokyo : Iwanami Shoten.)

Carnegie Institution of Washington. Year Book No. 30, July 1, 1930, to June 30, 1931, with Administrative Reports through December 11, 1931. Pp. xix+63+505. (Washington, D.C.)

Cornell University Agricultural Experiment Station. Bulletin 526 : Potato Storage on 259 Farms in New York. By A. L. Wilson and E. V. Hardenburg. Pp. 58. Bulletin 527 : The Supply Side of the New York Milk Market. By H. A. Ross. Pp. 151. Bulletin 528 : Fermentation and Crystallization of Honey. By Elton J. Dyce. Pp. 76. Bulletin 531 : Relative Effectiveness of Limestone Particles of Different Sizes. By T. L. Lyon. Pp. 13. (Ithaca, N.Y.)

CATALOGUES

Oxford University Press General Catalogue, 1931. Pp. 408. (London : Oxford University Press.)

Catalogue of Scientific Books and Publications of Learned Societies. (No. 385.) Pp. 102. (Cambridge : W. Heffer and Sons, Ltd.)

A Catalogue of Book Bargains. (No. 534.) Pp. 16. (London : William Glaisher, Ltd.)

Medical Books, including Surgery, Dentistry, Pharmacy, Sexology, Nursing, Hygiene, Anatomy, Pathology, Ophthalmology. Pp. 62. (London : W. and G. Foyle, Ltd.)

The Microid Physical Series : New Designs in Physical Apparatus, with Experimental Notes. (Catalogue No. 115X.) Pp. 40. Microid Balances and Weights. (List No. GT1081.) Pp. 4. (London : Griffin and Tatlock, Ltd.)