

passed east of Sombrero on Sept. 13. On Barbados 11,400 houses were swept away, about 115 lives lost, and 50,000 people rendered homeless. On St. Vincent, which experienced the full force of the storm, every exposed building or tree was blown down and 200 lives were lost. The rain was very heavy, amounting to 4.95 in. between 9 A.M. and noon on Sept. 11; probably as much fell between noon and 3 P.M., but the rain-gauge was destroyed. The rain filled the mountain torrents and whole villages were swept away. All shipping was destroyed. At St. Lucia an avalanche filled a valley for 3 miles, burying houses and estates. A curiosity of the storm was that at Kingstown, St. Vincent, the rain which fell was hot and stinking, and rotted clothes exposed to it; it may have come from the crater lake of Soufriere.

Sept. 10, 1899. Alaskan Earthquake.—This was one of the world's great earthquakes, for it disturbed an area of perhaps  $1\frac{1}{2}$  million square miles. At the time little was known about the earthquake, for the central district was almost uninhabited. Six years later, however, the evidence of remarkable changes of elevation was still visible in raised beaches and in the bands of dead barnacles adhering to the cliffs. These showed that the coast was uplifted from a few feet to 47 ft. 4 in. Variations in the amount of elevation revealed the existence of a number of faults that divided the crust up into blocks, the tilting of which gave rise to the earthquake.

Sept. 10, 1902. Hailstorm near Maidstone.—Great damage was caused to the hop-crop in the districts around Maidstone by a violent hailstorm, accompanied by thunder. The hail in many places stripped the plants of all foliage, and the heavy rain even washed away the poles.

Sept. 10, 1903. Gale over British Isles.—During the evening and night of Sept. 10 a deep barometric depression passed rapidly across Ireland and northern England. In its front the barometer fell at the rate of nearly 5 mb. (1.4 in.) an hour, and pressure in the centre was so low as 975 mb. (28.8 in.). On the south coast of England the gale had a remarkable effect on the autumn vegetation, which was scorched brown, curled, and shrivelled up, even at places in the lee of the downs, several miles inland. This effect can scarcely have been caused by salt spray, as the storm was accompanied by very heavy rainfall.

Sept. 11, 1806. Hurricane in Porto Rico.—One of the severest hurricanes on record in the southern part of the island of Porto Rico occurred on this date. Many churches and a large portion of the houses were damaged, fruit trees were destroyed, and rivers overflowed their banks, destroying much property. At San Juan shipping suffered much loss.

Sept. 12, 1717. Triolet Glacier Outbreak.—A great moraine at the end of the glacier of Triolet, at the bottom of Val Ferret, broke up in the night, and an immense amount of debris, mixed with water and enormous blocks of ice, covered all the ground surrounding two chalets. Since then the fertile plain on which these chalets were situated has been covered by ice.

Sept. 13, 1922. Highest Recorded Temperature.—At Azizia in the semi-desert plain of Jefara, in northern Africa, between the coast of Tripolitania and the interior plateau, a maximum temperature of  $136.4^{\circ}$  F. was recorded on Sept. 13, 1922. This is the highest shade temperature ever recorded by a tested thermometer exposed under standard conditions, and is  $2.3^{\circ}$  F. higher than the previous record at Death Valley, California on July 13, 1910. The site of the station is in a shallow basin which becomes highly heated by the sun's rays.

No. 3175, Vol. 126]

## Societies and Academies.

### PARIS.

Academy of Sciences, July 16.—The president announced the death of A. T. Schloesing, member of the Section of Rural Economy.—Ch. Maurain, Mlle. G. Homery, and G. Gibault: The vertical atmospheric current. At the Val-Joyeux Observatory the electric field is measured continuously and the conductivities corresponding to the positive and negative ions measured three times daily. Tables are given showing the values of the vertical currents deduced from these data.—J. Courrégelongue and H. Maugein: Some experiments on auto-oscillation and autorotation of immersed plates.—Edgar Pierre Tawil: Stationary ultra-sonorous waves made visible in gases by the method of striae. A description of an apparatus capable of rendering visible the stationary waves produced in air by a piezo-electric crystal. Photographs are given.—Herculano de Carvalho: The presence of uranium in mineral waters. The uranium-radium ratio. Uranium determinations have been made in waters from five springs, the amount found being of the order of  $10^{-6}$  gm. per litre. There was no constant ratio between radium and uranium.—F. Bourion and Mlle O. Hun: The determination by the boiling method of the affinity relative to the formation of the complex ammonium iodide-cadmium iodide.—Auméras and Tamisier: The spectrophotometric study of the cupripyridine ion in aqueous solution.—Mme. Ramart-Lucas and J. Hoch: The configuration of molecules in space. The absorption in the ultra-violet of the acids  $C_6H_5(CH_2)_nCO.OH$ ,  $C_6H_5(CH_2)_n(CO.OH)_2$  and the hydrocarbons  $C_6H_5(CH_2)_n$ ,  $C_6H_5$ .—Sébastien Sabetay and Jean Bleger: The chromic oxidation of the cyclanepolyols. By the oxidation of quinite in acetic anhydride solution by chromic anhydride, cyclohexanone is obtained in good yield (56 per cent theoretical yield): its physical properties and chemical reactions are given.—Charles Dufraisse and Marius Badoche: Researches on the dissociable organic oxides: the transformation of oxyrubrene into a non-dissociable isomer, iso-oxyrubrene. A probable formula is assigned to this oxide, but it is still difficult to suggest a formula for oxyrubrene which explains its property of dissociation with liberation of oxygen.—Marcel Solignac: The mineralogical characters of the oolitic iron mineral of Djebel el Ank, southern Tunis.—Jean Lugeon: Measurements of the ionisation, of the electric field, and of atmospheres on Mt. Blanc.

### CRACOW.

Polish Academy of Science and Letters, June 2.—C. Zakrzewski and D. Doborzynski: Some remarks on the dielectric polarisation of the elements. The dielectric polarisation of elements not belonging to the seventh group of the periodic system is independent of the temperature, and the molecules of these elements do not possess electric dipoles. The polarisation of elements belonging to the seventh periodic group depends on the temperature, and this polarisation can be expressed by the well-known Debye formula.—Wład. Gorczyński: The maximum values of the intensity of the solar radiation observed on oceans and in other regions of the earth. Whilst the ocean values do not exceed 1.4 cal. at normal incidence, 1.4–1.5 cal. is obtained on the plains and 1.7 cal. in an oasis of the Sahara. Still higher maxima are observed at high altitudes.—H. Lachs and J. Biczysk: The determination of the electrokinetic potential with the aid of the method of the e.m.f. of filtration.—E. Chrobaczek: The phenomena of correlation in

wheat and the theory of associations in chromosomes.—A. Oszacki: The oxygen in the venous blood of human sarcoma.

## SYDNEY.

Linnean Society of New South Wales, June 25.—J. R. Malloch: Notes on Australian Diptera (24). This paper completes the notes on Tachinidæ. Species belonging to the tribes Actiini, Linnæmyiini, Cylin-dromyiini, and Tachinini are dealt with. Twelve genera, one subgenus, and forty-six species are described as new, and a new name is suggested for *Phorocerosoma*, preoccupied.—G. H. Hardy: Fifth contribution towards a new classification of Australian Asilidæ. This paper revises the tribes Saropogonini and Stichopogonini, contrasting the Australian forms with many of the world's genera. One new genus and two new species are proposed; a table of chaetotaxy, and a key to the genera are included.—H. N. Dixon and W. Greenwood: The mosses of Fiji. The mosses known from Fiji now total 205 species, about half of these having been added to the list since 1917 by the collections made by one of the authors (W. G.). This paper contains record of all the known species in Fiji, with notes of the localities from which the species have been collected. A key is given to the genera found; twenty-seven species and five varieties are described as new.

## ROME.

Royal National Academy of the Lincei, April 6.—V. Volterra: Hereditary mechanics. The energetics of hereditary mechanics, limited to the case of linear hereditary actions, was recently considered. The case of non-linear actions for a system with only one degree of freedom is now treated.—T. Levi-Civita: Further consideration of the motion of a body of variable mass.—G. Hagen: Photographed oscillations of the free pendulum.—F. Vercelli: General method for the analysis of the periodicities in statistical and experimental diagrams.—G. Silva: The formula of normal gravity.—G. Tizzoni and G. De Angelis: Immunity against the adeno-carcinoma of the mouse conferred by the pulp of the tumour itself with addition of formol. The phenolated vaccine previously tried causes mainly an anti-neoplastic immunity, whereas the formulated vaccine results principally in anti-toxic immunity.—A. M. Bedarida: The infinity of prime numbers in quadratic forms.—G. Barba: The functional equation  $f(x)f'(x) = f[f(x)]$  connected with a geometrical problem. The form of the intrinsic equation of a curve in order that this may be similar to its evolute, is considered.—P. Cattaneo: A class of cyclic varieties.—I. J. Schwatt: The development of  $\sec^2 x$  in Maclaurin's series.—A. Belluigi: The topographical corrections in Eötvös remainders.—E. Segrè: Statistical calculation of the spectrum of an ionised atom. The statistical method is applicable to the construction of the spectrum of an ionised atom from the atomic number and the degree of ionisation. Even with highly ionised atoms the method furnishes satisfactory results.—G. Bargellini and A. Grippa: 2:5-Dibromoanisidine. This compound and several of its derivatives are described.—G. Bargellini and F. Madesani: 3:5- and 2:6-Dibromoanisidines. Bromination of acetyl-*p*-anisidine yields the acetyl derivative, not of 3:5-, but of 2:5-dibromoanisidine.—G. Natta: Crystalline structures of hydrogen sulphide and hydrogen selenide (1). X-ray investigation indicates that hydrogen sulphide and hydrogen selenide crystallise in the cubic system. For the former, the side of the unit cell is  $5.778 \pm 0.003$  Å. and its volume  $192.9 \times 10^{-24}$  c.c. On the assumption that the unit cell contains four molecules and that the weight

of the hydrogen atom is  $1.65 \times 10^{-24}$  gm., the density of solid hydrogen sulphide at  $-170^\circ$  is calculated to be 1.166.—G. A. Barbieri: Reduction of silver ferricyanide by means of ferrous sulphate. Under suitable conditions, ferrous ions may reduce ferricyanogen ions, even in acid solution. This reaction is applicable to the determination of ferricyanides.—S. Visco: Action of the latex of *Ficus carica* on proteins. The action of this latex on the proteins constituting the albumen of hens' eggs does not proceed beyond the formation of products of the character of secondary proteoses.—S. Sorrentino: The older formations of Monte S. Calogero and of Nadure near Sciacca.—L. Maddalena: Study of a phenomenon exhibited by the Aurisina stone used for covering walls. When this stone is used for outside constructional work, yellowish rusty spots, often zoned, gradually develop on it, and, after increasing in diameter to 15-20 cm., slowly fade and finally almost disappear. This phenomenon is due to the formation of colloidal iron hydroxide (hydrosol) by the oxidation of the pyrites present to ferrous sulphate and interaction of this with the lime of the mortar in presence of slightly alkaline water. Moisture easily transports the colloid to the outer surface of the porous stone, where it is first fixed as hydrogel by evaporation of the water and later washed away by the mechanical action of rain.—C. Artom: Origin and evolution of parthogenesis in *Artemia salina* diploide of Cette.—P. Pasquini and G. Meldolesi: Investigations on radio-sensitivity in the development of the eggs of amphibia (2). Specific alterations and secondary malformations from differential radio-susceptibility in *Rana esculenta*.—N. A. Barbieri: Improvement in the metabolism of plants by physiological culture without alteration of the soil. Experiments with *Cattleya*, maize, beans, potatoes, sugar-beet, etc., confirm the advantages of the author's method of homogeneous mineral culture, which consists of localised application of a mixture of the soluble and insoluble salts existing preformed in the plants in the amount required by the whole of the crop.—V. Rivera: Radiation and growth in plants—development under a leaden screen.

## WASHINGTON, D.C.

National Academy of Sciences (*Proc.*, Vol. 16, No. 5, May 15).—A. E. Navez: On the distribution of tabular roots in *Ceiba* (Bombacaceæ). In Cuba, the so-called buttress or tabular roots of these trees grow principally on the sides struck by the dominant winds, the largest generally in the N.E.-E.N.E. direction. The roots are 'resistance cables' rather than 'buttresses'.—Ernest Glen Wever and Charles W. Bray: Action currents in the auditory nerve in response to acoustical stimulation. A decerebrated cat was used and electrodes placed on the exposed auditory nerve. Sound stimuli applied to the animal's ear set up action currents which, when amplified, produced sounds in a telephone apparently identical with the original stimulus. Speech was transmitted with great fidelity; response was obtained with frequencies between 125 and 4100 per second. Frequency of response is correlated with frequency of stimulation.—Robert K. Nabours: Mutations and allelomorphism in the grouse locusts (Tettigidæ, Orthoptera).—F. H. Murray: The electromagnetic field exterior to a system of perfectly reflecting surfaces. A mathematical discussion.—Louis S. Kassel: The rates of second-order gas reactions. A theoretical discussion based on the assumption that the chance of reaction at a collision increases with energy of collision.—Ernest W. Brown: On the prediction of trans-Neptunian planets from the perturbations of Uranus.—Edwin H. Hall: The 'reaction-isochore' equation

for ionisation within metals.—Sinclair Smith: The effect of low temperatures on the sensitivity of radiometers. Radiometers in hydrogen, helium, and air in a specially designed chamber at  $-180^{\circ}\text{C}$ . were exposed to light from a controlled source. Maximum sensitivity increases at low temperature and shifts towards lower pressures.

## Official Publications Received.

### BRITISH.

Mines Department. Eighth Annual Report of the Safety in Mines Research Board, including a Report of Matters dealt with by the Health Advisory Committee, 1929. Pp. 62. (London: H.M. Stationery Office.) 1s. net.

Astrophographic Catalogue 1900-0. Sydney Section, Dec.  $-51^{\circ}$  to  $-65^{\circ}$ , from Photographs taken at the Sydney Observatory, New South Wales, Australia. Vol. 11: R.A.  $12^{\text{h}}$  to  $18^{\text{h}}$ , Dec.  $-53^{\circ}$  to  $-55^{\circ}$ , Plate Centres Dec.  $-54^{\circ}$ . Pp. 86. Vol. 12: R.A.  $18^{\text{h}}$  to  $24^{\text{h}}$ , Dec.  $-53^{\circ}$  to  $-55^{\circ}$ , Plate Centres Dec.  $-54^{\circ}$ . Pp. 43. (Sydney, N.S.W.: Alfred James Kent.)

The Scientific Proceedings of the Royal Dublin Society. Vol. 19 (N.S.), No. 38: A Study of the Polysaccharides. Part 2: Note on the Purification of the Natural Products. By J. Reilly and Declan T. McSweeney. Pp. 451-453. (Dublin: Hodges, Figgis and Co.; London: Williams and Norgate, Ltd.) 6d.

The North of Scotland College of Agriculture. Calendar, Session 1930-1931. Pp. viii+120. (Aberdeen.)

Proceedings of the Royal Society. Series A, Vol. 128, No. A808. Pp. 361-666. (London: Harrison and Sons, Ltd.)

The Journal of the Ipswich and District Natural History Society. Edited by Henry Ogle. Vol. 1, Part 2. Pp. ii+71-140. (Ipswich.)

Imperial Agricultural Bureau. Bulletin No. 1: Miscellaneous Information relating to Breeding of Herbage Plants. Pp. 22. Plant Genetics: Herbage Plants. Catalogue of Journals and Periodicals in the various Libraries in Aberystwyth to which the Bureau has Access. Supplement to Bulletin No. 1, 1930. Pp. 10. (Aberystwyth.)

The Rowett Research Institute. Collected Papers, Vol. 2. Edited by Dr. John Boyd Orr. Pp. xv+588. (Aberdeen.) 21s.

Forestry Commission. Tenth Annual Report of the Forestry Commissioners, Year ending September 30th, 1929. Pp. 69. (London: H.M. Stationery Office.) 1s. 3d. net.

### FOREIGN.

Proceedings of the Imperial Academy. Vol. 6, No. 6. Pp. xix-xxi+217-242. (Tokyo.)

The Science Reports of the Tôhoku Imperial University, Sendai, Japan. Second Series (Geology), Vol. 14, No. 1. Pp. 96+28 plates. Fourth Series (Biology), Vol. 5, No. 2. Pp. 215-422+plates 9-14. (Tokyo and Sendai: Maruzen Co., Ltd.)

Svenska Hydrografisk-Biologiska Kommissionens Fyrskapsundersökning. År 1929. Pp. 45. (Göteborg: Elanders Boktryckeri A.-B.)

Japanese Journal of Mathematics: Transactions and Abstracts. Vol. 7, No. 1. Pp. 99. (Tokyo: National Research Council of Japan.)

Annales de l'Observatoire de Paris: Section d'Astrophysique à Meudon. Tome 8, Fascicule 2: Recherches sur la structure de la chromosphère solaire. Par L. D'Azambuja. Pp. iii+120+10 planches. (Paris: Gauthier-Villars et Cie.)

Proceedings of the American Philosophical Society. Vol. 69, No. 5. Pp. 257-294. (Philadelphia.)

Division of Fish and Game of California. Fish Bulletin No. 22: A Bibliography of the Tunas. By Genevieve Corwin. (Contribution No. 87 from the California State Fisheries Laboratory.) Pp. 103. (Terminal, Calif.: California State Fisheries Laboratory.)

Bulletin of the Vanderbilt Marine Museum. Vol. 1, Art. 2: Scientific Results of the Yacht *Ara* Expedition during the Years 1926 to 1930, while in Command of William K. Vanderbilt. Fishes (collected in 1929). By N. A. Borodin. Pp. 89-64+2 plates. (Cambridge, Mass.: The Cosmos Press, Inc.)

Ministry of Public Works, Egypt: Physical Department. Physical Department Paper No. 27: Upper Winds at Cairo and Khartoum. By L. J. Sutton. Pp. 52+6 plates. (Cairo: Government Press.) 10 P.T.

### CATALOGUES.

Photography Simplified: Printing and Toning. Pp. 12. (London: Burroughs Wellcome and Co.)

A Catalogue of Important Scientific Books containing Standard and Rare Works on Ornithology, Zoology, Ecology, Entomology, Botany, Forestry, Mathematical and Physical Sciences, Natural History in General. Pp. 30. (London: W. and G. Foyle, Ltd.)

The Nickel Bulletin. Vol. 3, No. 8, August. Pp. 241-280. (London: The Mond Nickel Co., Ltd.)

## Diary of Societies.

### CONGRESSES.

#### SEPTEMBER 3 TO 10.

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE (at Bristol). (For particulars see *NATURE* of Aug. 30.)

Change of Programme.—(B) Sept. 9, at 11 A.M.—Prof. C. S. Gibson and Prof. J. L. Simonsen: Some Recent Investigations of Organic Compounds of Gold; instead of Prof. Semenoff: The Initiation of Combustion.

No. 3175, Vol. 126]

#### SEPTEMBER 4 TO 14.

INTERNATIONAL ZOOLOGICAL CONGRESS (at Padua).

#### SEPTEMBER 7 TO 13.

INTERNATIONAL CONGRESS OF AMERICANISTS (at Hamburg).—Papers on The Aboriginal Peoples of America and their Ethnic Relations, The Prehistory of America, Manners and Customs of the Various Groups of Indians and their Distribution in the Old and New World, The Aboriginal Languages, The Discovery and Colonisation of America, The Geography and Geology of America, with Special Reference to Human Activities, and a Discussion on The Civilisation of the Indians at the time of their first contact with Europeans and to-day.

#### SEPTEMBER 8 TO 12.

INTERNATIONAL CONFERENCE OF THE APIS CLUB.

Monday, Sept. 8 (at Apothecaries' Hall, Water Lane, E.C.). at 3.30.—Miss Annie D. Betts: The National Importance of Apiculture (Presidential Address).

Wednesday, Sept. 10 (at Crystal Palace).—Dr. G. Morison: Notes on Acarine Disease.

Thursday, Sept. 11 (at Crystal Palace), at 11 A.M.—Dr. H. W. de Boer: Behaviour of Diastatic Ferments in Honey when Heated.

At 12 noon.—C. H. Hooper: Fruit Pollination and the Importance of Insect Visitors in Fruit Production.

At 2.30.—D. Morland: Frosting.

At 5.30.—Dr. F. Kretschy: Our Bee as Doctor.

At 6.30.—L. M. Bertholf: The Distribution of Stimulative Efficiency in the Ultra-Violet for the Honey Bee.

Friday, Sept. 12 (at Crystal Palace), at 11 A.M.—M. le Chanoine A. Delaigues: Transformism.

At 12 noon.—Dr. J. Stitz: Ultra-Violet Absorption of Honey.

#### SEPTEMBER 9 TO 12.

INSTITUTE OF METALS (at Southampton).

Tuesday, Sept. 9 (in Chantry Hall), at 8 P.M.—Prof. D. Hanson: The Use of Non-Ferrous Metals in the Aeronautical Industry (Autumn Lecture).

Wednesday, Sept. 10 (in Chantry Hall), at 10 A.M.—E. A. Smith: Rolled Gold: Its Origin and Development.

Dr. W. Rosenhain, J. D. Grogan, and T. H. Schofield: Gas Removal and Grain Refinement of Aluminium Alloys.

J. D. Grogan: Pressure Die-Cast Aluminium Alloy Test-Pieces.

N. W. Ageew and Olga I. Vher: The Diffusion of Aluminium into Iron.

Dr. K. L. Meissner: The Artificial Ageing of Duralumin and Super-Duralumin.

Dr. W. L. Fink and Dr. K. R. Von Horn: Lattice Distortion as a Factor in the Hardening of Metals.

Dr. Marie L. Gayler: A Study of the Relation between Macro- and Microstructure in Some Non-Ferrous Alloys.

Thursday, Sept. 11 (in Chantry Hall), at 10 A.M.—Dr. J. C. Hudson: The Effect of Two Years' Atmospheric Exposure on the Breaking Load of Hard-Drawn Non-Ferrous Wires.

Dr. W. H. J. Vernon and L. Whitby: The Open-Air Corrosion of Copper. Part II. The Mineralogical Relationships of Corrosion Products.

Dr. E. Voce: Silicon-Copper Alloys and Silicon-Manganese-Copper Alloys.

E. Vaders: A New Silicon-Zinc-Copper Alloy.

H. C. Dewes: The Effects of Phosphorus on the Strength of Admiralty Gun-Metal.

Dr. D. Stockdale: A Note on the Constitution of the Cadmium-Zinc Alloys.

Prof. G. Tammann: On the Determination of Crystallite Orientation.

D. A. N. Sandifer: Pendulum Hardness Tests of Commercially Pure Metals.

F. Hargreaves: Heat-Treatment, Ball-Hardness, and Allotropy of Lead.

#### SEPTEMBER 11 TO 14.

SWISS SOCIETY OF NATURAL SCIENCES (at St. Gallen).—In sixteen sections covering Pure and Applied Science and Medicine. Addresses by Prof. E. Abderhalden, on The Significance and Mechanism of Ferments in Nature; Prof. P. Niggli, on Ten Years' Work of a Mineralogical and Petrographic Institute; Prof. R. Chodat, on The Symbiosis of Lichens and the Problem of Specificity; and Prof. C. Wegelin, on Endemic Cretinism.

#### SEPTEMBER 13 TO 20.

NEWCOMEN SOCIETY FOR THE STUDY OF THE HISTORY OF ENGINEERING AND TECHNOLOGY (at Liverpool).

#### SEPTEMBER 15 TO 20.

IRON AND STEEL INSTITUTE (in Czechoslovakia).

Monday, Sept. 15, at 10 A.M.—A. Kříž: The Heterogeneity of an Ingot made by the Harmet Process.

J. Šárek: What Reasons Compelled the Prague Ironworks to Introduce Thin-Walled Blast-Furnaces.

W. H. Hatfield: Permanence of Dimensions under Stress at Elevated Temperatures.

Tuesday, Sept. 16, at 10 A.M.—O. Quadrat: A Contribution on the Problem of the Analysis of Basic Slags and the Representation of their Composition in a Triangular Diagram.

H. C. Wood: Open-Hearth Furnace Steelworks. A Comparison of British and Continental Installations and Practice.

D. F. Campbell: High-Frequency Steel Furnaces.

L. W. Schuster: The Effect of Contamination by Nitrogen on the Structure of Electric Welds.