

and afterwards adjourned to their own apartments to hear the remainder of the president's anniversary address.

#### Ashmolean Society, Oxford

At a meeting of this Society held on February 21, 1834, P. Duncan, of New College, exhibited part of the contents of a mummy of a crocodile, recently presented to the museum by Mr. Munro; and gave some account of crocodiles from Cuvier and other writers. Dr. Daubeny exhibited Daniell's pyrometer, and made some observations on the influence of light on animal life; and concluded by proposing the following query: "Is it reasonable to suppose (with Dr. Edwards) that the singular animal called the *Proteus Anguinus*, which occurs in the dark caverns of Carniola, is a reptile whose form has never been developed, bearing the same relation to some unknown species which the tadpole does to the frog?"

#### Agricultural and Horticultural Museums and Gardens

Agricultural Museum, Edinburgh. Prof. Law, the scientific teacher of agriculture in the University of Edinburgh, has long been engaged in forming, at his own private expense, an agricultural museum; and we are most happy to learn, from the Scotch newspapers, that government has lent pecuniary aid to so useful an undertaking. Whether any exhibition of the kind instituted at Stirling, and followed by Mr. Lawson of Edinburgh, and Dickson of Perth, is to be combined with this museum, we have not learned; but we are most happy to see the government of the country taking an interest in such national objects. We hope the time is not far distant when a sum will be advanced to complete the Thames tunnel, and another to establish the Horticultural Society's garden at Chiswick on a permanent footing. If this is not done by government, we hope that, when the metropolis and its environs are put under one system of self-government, they will have a metropolitan garden, either at Chiswick, or elsewhere, worthy of the first city in the world, and open to all its citizens. (J. C. Loudon, in the *Gardener's Magazine* of February 1834.)

#### Brunel's Thames Tunnel

In February 1834, a collection of models of buildings and public works was on view in King William Street, West Strand, London, the most important exhibit being a model of the Thames Tunnel from Rotherhithe to Wapping. The model, which was on a scale of  $\frac{1}{2}$  in. to a foot, was described by the *Times* as doing great credit to the ability, ingenuity and taste of the artist and as an exceedingly accurate representation in miniature of what the tunnel would be when completed. Begun in 1825, the tunnel, for which the elder Brunel was the engineer, had attracted a great deal of attention and on one occasion the Duke of Wellington said: "Of my own knowledge I can speak of the interest excited in foreign nations for the welfare and success of this undertaking; they look upon it as the greatest work of art ever contemplated". As in the case of Trevithick's tunnel of 1808, immense difficulties were encountered during its construction. In May 1827, when a distance of 544 ft. had been excavated, there was an irruption from the river. This was overcome, but in January 1828 a more serious irruption occurred, which nearly cost the younger Brunel his

life, and as funds were then exhausted, work ceased for the time. Various efforts were made to obtain funds from the Government for the completion of the work and the negotiations which finally proved successful were in progress when the model of 1834 was on exhibition to the public. The tunnel, which was 1,300 ft. long, 20 ft. high and 35 ft. wide, was closed to the public in 1866, when it was purchased by the East London Railway Company.

## Societies and Academies

### LONDON

Royal Society, February 8. G. SALT: Experimental studies in insect parasitism. (1) Introduction and technique. (2) Superparasitism. Statistical analysis of field data relating to natural parasitism by *Collyria calcitrator*, *Ibalia leucospoides* and *Limnerium validum* shows that the parasites were not distributed at random among their hosts. A female of *Trichogramma evanescens* placed on a group of hosts can be observed to avoid ovipositing in hosts already attacked. Females of *Trichogramma* are able, at least for a time, to retain their eggs rather than deposit them in parasitised hosts. This restraint leads to the deposition of fewer eggs than the parasites are actually capable of laying. Females of *Trichogramma* are able to distinguish between large and small hosts and, when the number of hosts is limited, lay two, three or even four eggs in some of the larger ones. The hypothesis that the progeny of parasitoids are distributed at random, without reference to the previous parasitisation of the host, is untenable for the species considered. MISS D. E. SLADDEN: Transference of induced food habit from parent to offspring (1). Previous experiments with the stick-insect (*Carausius morosus*) in 1912-15 tended to indicate the inheritance of an induced food-habit. With the object of testing this possibility a series of experiments was devised. In the first generation few insects took ivy at all readily, only 10 per cent at the first presentation, 32 per cent at the second, 21 per cent at the third, 12 per cent at the fourth and so on for as many as ten presentations before the whole 125 insects being tested were induced to accept ivy. These insects were then grouped according to the presentation at which ivy was taken and reared to maturity on that food-plant. In the next generation 78 per cent took ivy at the first presentation. Other insects of the second generation were tested for preference. An insect on hatching was given both privet and ivy, being required to show its preference at three successive feeds. Some insects took only privet, others only ivy and yet others showed no preference. These were regarded as neutral. Offspring of privet-fed parents, 44 per cent privet, 35 per cent neutral, 21 per cent ivy. Offspring of ivy-fed parents, 28 per cent privet, 37 per cent neutral, 35 per cent ivy. MISS P. A. CLAPHAM: Experimental studies on the transmission of gapeworm (*Syngamus trachea*) by earthworms. *Eisenia fetida*, an earthworm commonly found in contaminated soil, is an important intermediate host of *Syngamus trachea*, the common gapeworm of birds. *Lumbricus terrestris*, another earthworm, may also act as intermediate host, but is much less efficient. The third stage larva of *S. trachea*, which hatches from the egg, is ingested by the earthworm; it migrates to the muscles of the

body wall, where a thin hyaline cyst is developed around it. It remains dormant in this position, undergoing no further morphological development, until the earthworm is taken in by a chicken or other suitable host. The *Syngamus* larva then hatches, finds its way to the lungs and trachea, where it settles down and grows to an adult gapeworm. *Syngamus merulae*, the gapeworm of blackbirds, has been transmitted to chickens by means of infected *Eisenia fetida*.

## PARIS

Academy of Sciences, January 3 (*C.R.*, 193, 1-128).  
 E. LECLAINECHE: Notice on Charles Porcher. J. COSTANTIN: Cultural experiments on the potato in the Pyrenees. As in previous experiments in the Alps, the yield increases with altitude. At a height of 1,400 metres the number of tubers on each plant is higher. A higher altitude diminishes the tendency to a disease. P. VIALA and P. MARSAIS: *Court-Noué*, a parasitic disease of the vine. J. CABANNES and J. DE RIOLS: The Raman spectrum of water. Diagrams of the Raman spectra of water in the gaseous, liquid and solid states are given, together with the spectra of some salt solutions. E. J. GUMBEL: The mathematical expectation of the  $m$ th value. P. VINCENSINI: The successive transformations of Ribaucour. Families of concurrent cyclic systems. BERTRAND GAMBIE: The theorems of Meusnier and Moutard: algebraical surfaces osculating at a surface. GEORGES GIRAUD: Certain mixed problems relating to linear equations of the elliptic type. F. LEJA: A limit function connected with Lagrange polynomials and with closed ensembles. ARNAUD DENJOY: A function of Minkowski. A. KOSTITZIN: Hereditary elastic phenomena and the principle of the closed cycle. MAX SERRUYS: The rôle of peroxides in the knocking of petrol motors. Correction to an earlier communication, of December 18, 1933. P. DUMANOIS: Concerning combustion in motors. Discussion of the possible effects produced by the formation of peroxides in petrol motors. A. ETÉVÉ: A low velocity vane for windmills. PAUL BOURGEOIS and J. F. COX: The distribution of the inclinations and eccentricities of the orbits of the minor planets. AL. PROCA: The quantic mechanics of protons. PIERRE VERNOTTE: The measurement of the thermal conductivity and specific heat of insulators. V. POSEJPAL: The materialisation of the ether. A. COTTON: Remarks on the preceding paper. MAURICE ROBERT and RENÉ OZOUX: A new amplifying voltmeter. J. CAYREL: Remarks on the note by Anastasiadès on the mechanism of rectification in magnesium-copper sulphide rectifiers. The author holds, contrary to the view of Anastasiadès, that the sulphide ( $\text{CuS}$ ) plays the principal part in the rectification and that the effect of the cuprous sulphide is secondary. PAUL JANET: Remarks on the preceding communication. It is pointed out that Anastasiadès and Cayrel are practically in agreement so far as their experimental results are concerned, but differ in their hypotheses regarding the respective actions of cuprous and cupric sulphide in the rectifying effect. Further work on the question is necessary. JEAN LECOMTE: The infra-red absorption spectra of the monohalogen derivatives of the saturated fatty hydrocarbons. There is, on the whole, good agreement between the positions of the maxima measured and those predicted from the Raman effect. D. SÉFÉRIAN: A method of producing the spectrum of atomic nitrogen ( $\text{N}_1$ ). The arc is formed between

two tungsten wires in an atmosphere of nitrogen. The lines due to neutral atomic nitrogen are given and compared with the wave-lengths given by Duffendack and Wolfe. A. GRUMBACH and Mlle. M. RIBAILLIER: The photoluminescence of potash and soda. The fluorescence of these alkalis is due to the presence of traces of an organic compound, probably a formate; it is not due to the water present. RENÉ LUCAS, MARCEL SCHWOB and ANTOINE GOLDET: The thermal variation of the magnetic double refraction and dispersion of ethyl phenylsuccinate. The results, given in both tabular and graphical forms, can be interpreted by the hypothesis of molecular polymorphism. P. JACQUET: The structure of the electrolytic deposits of copper obtained in the presence of certain colloids. The deposited copper was examined by metallographic methods. Colloids differ in their effects; gelatine and serum albumen are very active, gum arabic and tragacanth are less active, dextrin and glycozell are almost inactive. Mlle. Y. CAUCHOIS: Focalisation of X-rays by plane crystalline sheets. HORIA HULUBEI: Methods of focusing [of X-rays] in the analysis of crystalline powders. F. JOLIOT: The dematerialisation of pairs of electrons. PARISELLE and DELSAL: The polarimetric study of the ferri-tartaric complexes. J. CURNOT, M. CHAUSSAIN and H. FOURNIER: The behaviour of some light alloys towards marine corrosion. The degree of resistance to corrosion varies considerably with what would at first sight appear to be very slight changes of chemical composition, the presence of an additional 0.3 per cent of manganese reducing the loss of weight by corrosion to one half. LOUIS MÉDARD and Mlle. THÉRÈSE PETITPAS: Observation of the Raman OH band of nitric acid. Mlle. B. GRÉDY: The spectra of some acetylenic alcohols. ANDRÉ CHRÉTIEN and RAYMOND ROHMER: The hydrates of nickel sulphate.

(To be continued.)

## VIENNA

Academy of Sciences, Nov. 2. EMIL DITTLER and J. SCHADLER: The meteorite of Prambachkirchen (Upper Austria). This meteorite, which fell on November 5, 1932, weighed 2,125 gm. and had a density of 3.583 at 4° C. It was composed largely of iron, silica and magnesia, and mineralogically consisted of 5.77 vol. per cent of troilite, 4.27 of nickel-iron, 0.18 of ilmenite, 0.97 of merrillite, 16.92 of oligoclase and oligoclase-maskelynite, 44 of olivine with about 25 per cent of fayalite, and 27.86 of bronzite with 24 per cent of hypersthene. ALEXANDER KÖHLER and HANS LEITMEIER: Results of investigations on natural thermoluminescence in minerals and rocks. Of about a thousand specimens examined, 19 mineral species almost always showed characteristic thermoluminescence. In some cases, but not all, the thermoluminescence was accompanied by radioactivity. GEORG STETTER and JOSEF SCHINTLMEISTER: Method for investigating corpuscular rays with a double chamber and a double-tube electrometer. GEORG KOLLER, KARL PÖPL and ERICH KRAKAUER: Ramalic acid. This acid, which is shown to be identical with protocetraric acid, yields cetraric acid on alcoholysis. HERMANN TERTSCH: Results of cleavage measurements on anhydrite. THEODOR PINTNER: The excretion system of cestodes. FRANZ GRIENGL, FRITZ and KARL STEYSKAL: Conductivity and solubility relationships in the two ternary systems  $\text{Na}-\text{K}-\text{NH}_3$  and  $\text{Na}-\text{Li}-\text{NH}_3$ .

between  $-40^{\circ}$  and  $-70^{\circ}$ . The conductivity of K-Na and Li-Na alloys in dilute solution in ammonia is virtually additive, and gives no indication of the formation of compounds. In the first case, the solubility curve is composed of three branches, corresponding respectively with the solubilities of sodium, the compound  $\text{Na}_2\text{K}$ , and potassium, but in the second, transition from the solubility of lithium to that of sodium is scarcely discernible.

Nov. 9. JULIUS ZELLNER: (1) Chemistry of lichens (3): *Parmelia (Hypogymnia)*. A practical method for separating lichen acids is given. Substances not hitherto observed include ergosterol, a hydrocarbon, solid and liquid fatty acids, amorphous lichen acids, two new indifferent lichen compounds (hypogymnoles), amorphous polysaccharides, erythritol and lichenin. (2) With JARA BISO: Contribution to comparative plant chemistry (25): Chemistry of barks. The bark of *Zizyphus* contains ceryl alcohol, fatty acids, amorphous resin acids, a compound of the platanolic acid type, phlobaphens, tannins and invert sugar. The following new compounds have been found in the bark of *Fraxinus*: ceryl alcohol, a sterol, fatty acids, tannins and invert sugars; real bark substances were lacking. LUDWIG LÄMMERMAYR: Floral results of an inspection of the magnesite strata of Dienten (Salzburg). Of interest is the occurrence of *Calluna vulgaris* and *Erica carnea*, the former predominating where humus is plentiful and the latter where it is scarce. RUDOLF WAGNER: Methodics of prefloration investigation.

Nov. 16. ARTHUR HAAS: Energy-balance of the radiation in the universe. The displacement of the red in the spectra of the extra-galactic cloud indicates that all light quanta undergo regular diminution of their frequency and energy. It seems possible that such diminution in energy is counterbalanced by the continual new radiation of the cloud. JOSEF HOFMANN: Varying  $\beta$ - $\gamma$ -colorations of the  $\text{Na}_2\text{O} : 2\text{SiO}_2$  glass, and the causes of the pure violet colours in manganese-free glasses. HANS MOTZ and FRANZ PATAT: Ortho and para states of hydrogen of mass 2; the temperature course of the heat of rotation of  $\text{H}_2^2$ . E. CHWALLA: The general stability problem of thin plates strengthened by edge-angles. KARL FRITZSCH: Observations on flower-visiting insects in Styria, 1914.

### Forthcoming Events

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

#### Monday, February 19

UNIVERSITY COLLEGE, LONDON, at 5.30.—Mr. K. de B. Codrington: "India, the Village as a Social Unit".\*

ROYAL GEOGRAPHICAL SOCIETY, at 8.30.—A. R. Glen: "The Oxford University Expedition to Spitzbergen".

#### Tuesday, February 20

KING'S COLLEGE, LONDON, at 5.30.—Dr. H. J. Gough: "Fatigue of Metals—A Survey of the Present State of Knowledge" (succeeding lectures on February 27 and March 6).\*

BIRKBECK COLLEGE, at 6.—Prof. P. M. S. Blackett: "Cosmic Radiation" (succeeding lectures on February 27 and March 6).\*

#### Thursday, February 22

CHEMICAL SOCIETY, at 8.—(in the Lecture Theatre of the Royal Institution, Albemarle Street, W.1).—Prof. Hans Fischer: "Chlorophyll" (Fourth Pedler Lecture).\*

#### Friday, February 23

INSTITUTION OF PROFESSIONAL CIVIL SERVANTS, at 5.30.—(at the Royal Society of Arts, John Street, Adelphi, W.C.2).—Capt. F. G. Ramsay: "The Laying and Maintaining of Submarine Cables".\*

ASSOCIATION OF TECHNICAL INSTITUTIONS, February 23–24. Annual meeting at the Draper's Hall, London, E.C.2.

February 23, at 10.45.—W. Spens: Presidential Address.

### Official Publications Received

#### GREAT BRITAIN AND IRELAND

Report of the Departmental Committee on Sterilisation. (Cmd. 4485.) Pp. 137. (London: H.M. Stationery Office.) 2s. net.

The Journal of the Institute of Metals. Vol. 52. Edited by G. Shaw Scott. Pp. 255+50 plates. (London: Institute of Metals.) 31s. 6d.

British Standards Institution. No. 526: British Standard Definitions of Gross and Net Calorific Value. Pp. 5. (London: British Standards Institution.) 1s. net.

Hastings and St. Leonards Natural History Society. Report and Balance Sheet for the Session 1932–33, with List of Officers and Members, etc. Pp. 16. (St. Leonards.)

War Office. Report on the Health of the Army for the Year 1932. Vol. 68. Pp. iv+155+6 charts. (London: H.M. Stationery Office.) 2s. 6d. net.

#### OTHER COUNTRIES

Bulletin of the National Research Council. No. 90: Physics of the Earth, 6: Seismology. Pp. viii+223. 2 dollars. No. 91: Industrial Research Laboratories of the United States, including Consulting Research Laboratories. Fifth edition. Compiled by Clarence J. West and Callie Hull. Pp. 223. 2 dollars. No. 92: Numerical Integrations of Differential Equations. Report of Committee on Numerical Integration. Pp. 108. 1 dollar. No. 93: Systems of Electrical and Magnetic Units. Papers presented before the American Section, International Union of Pure and Applied Physics, Chicago, June 24, 1933. Pp. vi+112. 1 dollar. (Washington, D.C.: National Academy of Sciences.)

Department of Agriculture: Straits Settlements and Federated Malay States. Economic Series, No. 3: Malayan Agricultural Statistics, 1932. By D. H. Grist. Pp. iv+64. 50 cents. General Series, No. 16: List of Experiments at present in Progress at the Government Experimental Plantation, Serdang. Pp. iii+29. 50 cents. (Kuala Lumpur.)

Report on the Administration of the Meteorological Department of the Government of India in 1932–33. Pp. 39. (Delhi: Manager of Publications.) 12 annas; 1s. 3d.

Smithsonian Miscellaneous Collections. Vol. 88: Smithsonian Physical Tables. Eighth revised edition. Prepared by Frederick E. Fowle. (Publication 3171.) Pp. liv+682. (Washington, D.C.: Smithsonian Institution.)

Department of Agriculture: Tanganyika Territory. Pamphlet No. 10: The Red Locust. By W. V. Harris. Pp. 10+1 plate. (Dar es Salaam: Government Printer.) 50 cents.

Association of Mine Managers of the Transvaal (Incorporated). Some Aspects of Deep Level Mining on the Witwatersrand Gold Mines, with Special Reference to Rock Bursts. Pp. 198+15 plates. (Johannesburg.)

Smithsonian Miscellaneous Collections. Vol. 87, No. 20: Pliocene Bird Remains from Idaho. By Alexander Wetmore. (Publication 3228.) Pp. ii+12. (Washington, D.C.: Smithsonian Institution.)

Memoirs of the Peabody Museum of Natural History. Vol. 3, Part 3: A Revision of the Ceratapsia or Horned Dinosaurs. By Prof. Richard Swann Lull. Pp. xii+175+17 plates. (New Haven, Conn.) 4 dollars.

#### CATALOGUES

Microscopes and Accessories. 35th edition. Pp. 116. (London: W. Watson and Sons, Ltd.)

Insulin—Boots. Pp. 46. (Nottingham: Boots Pure Drug Co., Ltd.) Rapid Testing by Fluorescence. Pp. 16. (Slough: The British Hanovia Quartz Lamp Co., Ltd.)

Vacuum Thermocouples. (Vac 34.) Pp. 2. Electrometer Triode. (Trio 33.) Pp. 2. Pointer Galvanometer. (Na 34.) Pp. 2. (Delft: P. J. Kipp en Zonen.)

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