nerves of motion and sensibility. In the course of his paper, he suggested that the best mode of inquiry into the functions of the brain and nervous system would be to trace the filaments of the nerves through the filamentary and striated substance of the brain, and stated that the result of such an examination would show that two columns of motal and sensory nerves descend from each hemisphere of the brain and meet and decussate in the medulla oblongata. He also entered upon a minute account of the medulla, and of the various septa of nerves with which it is connected, tracing the filaments upwards into the brain and downwards into the spinal column. In concluding, he remarked that the use of the cerebellum had not yet been determined with any tolerable degree of accuracy. Bell at the time was surgeon to the Middlesex Hospital. He had been admitted F.R.S. in 1826, and in 1829 awarded a Royal medal for his discoveries relating to the nervous system.

### Death of H. W. Brandes

Prof. H. W. Brandes, who died at Leipzig on May 17, 1834, was the first meteorologist to construct a series of daily pressure charts. In his "Beiträge zur Witterungskunde", published at Leipzig in 1820, he discussed the weather over Europe of each day of 1783. He drew charts of equal deviation of pressure from 'normal' and of wind direction; these charts were not published and have been lost, but a specimen chart was reconstructed by Hildebrandsson from Brandes' material. Brandes believed that the winds converged towards regions of rarefied air or low pressure. In a later publication he discussed two 'cyclonic storms' and demonstrated that they advanced from west to east across the earth's surface.

In the year 1834 there was published the "Narrative of a Voyage in the Southern Atlantic Ocean . . . in H.M. Sloop 'Chanticleer' . . .", in which W. H. B. Webster gave what was probably the first printed account of the differences of average annual pressure between different parts of the world, and attributed to these hitherto unrecognised differences the perpetual interchange and motions of the atmosphere.

### Belgrave Literary and Scientific Institution

Following the establishment of this institution at 30 Sloane Street, the *Athenæum* reported in its issue of May 17, 1834, the delivery of an opening lecture by Prof. Robert E. Grant, whose subject was, "On the Nature, Growth, and History of Corals". We read that there was a crowded and "highly respectable" audience, and that the lecture was illustrated by a variety of beautiful specimens and diagrams; also, that the results of personal researches and ingenious experiments were detailed.

Prof. Grant, who is referred to above, was born in Edinburgh, and was a graduate of the University there. In his student days he was the frequent companion of Charles Darwin in excursions and walks. Darwin (then) thought that he was "dry and formal" ("Life"). Grant contributed many papers to the *Edinburgh Philosophical Journal*, and the *Memoirs of the Wernerian Society*. In 1828 he took up duties in London as professor of comparative anatomy and zoology at University College, and during forty-six academic years never omitted a single lecture. Appointed in 1837, he was for three years Fullerian professor of physiology at the Royal Institution. By will, Grant bequeathed his property, collections and library to University College. (*Roy. Soc. Proc.*, **23**.)

## Societies and Academies

### LONDON

**Royal Society**, May 3. W. D. WRIGHT: The measurement and analysis of colour adaptation phenomena. There is a main process of adaptation that operates through the regeneration of a photosensitive substance at a constant rate. The instantaneous response aroused by a stimulus is directly proportional to the magnitude of the latter, but owing to the process of adaptation, the response is rapidly reduced to an approximately constant level. This is the true interpretation of the constancy of the Fechner fraction, as opposed to the suggestion that the response is proportional to the logarithm of the stimulus. By locating the three hypothetical stimuli in the colour triangle corresponding to those sensations that can be modified in intensity, but not in colour, no matter what the colour of the adaptation may be, it has been possible to determine the fundamental response or excitation curves. R. J. LUDFORD: Factors influencing the growth of normal and malignant cells in fluid culture media. Significant differences have been found in the behaviour of different strains of tumours in mouse and rat serum. Some tumours have not been grown as sheets of malignant cells in either mouse or rat serum; other tumours have given good sheet growths in mouse serum but not in rat serum; while still others have grown in both sera. It is suggested that whether or not cells form sheets from explants in a fluid medium depends upon the adhesion of the cells to glass in that particular medium, rather than upon growth-promoting or growth-inhibiting properties of the medium. The presence of large numbers of active cells of the macrophage type interferes with sheet formation by malignant cells in fluid media. This is regarded as due partly to crowding out of the malignant cell on the surface of the cover glass, and partly to the phagocytic activities of the polyblasts. It may be the activity of cells of this type accumulated around a tumour graft in an 'immune' animal which prevents its growth.

### DUBLIN

**Royal Dublin Society**, February 27. J. J. NOLAN: Observations of atmospheric electricity at Glencree. The results for diurnal variation of ion content and rate of ion production in the lower atmosphere at Washington (Wait and Torreson), Canberra (Hogg) and Boston (Yaglou) were compared with those found at Glencree. It is shown that there is considerable support for the view that the maximum in the rate of ion production occurs approximately simultaneously at these stations.

### PARIS

**Academy of Sciences**, March 12 (*C.R.*, **198**, 997–1088). JEAN REY: The working of a thermocompressor carrying successively two compressible fluids of different densities: law of yield by weight: law of invariance of the final pressure. C. CAMICHEL, L. ESCANDE and G. SABATHE: The similiture of *ouvrages courts* with free surface. DMITRI MORDOUKHAY-BOLTOWSKOY: Abelian integrals with reducible systems of periods. J. O. STRUTT: Hill's differential equation in the complex domain. A. RAUCH: Remarks on holomorph functions in an angle and meromorph algebroids in the plane. K. NIKOLSKY: The relativist quantic interaction. RENÉ REULOS:

A new method of integration of the equation of electromagnetic waves and its application to the physics of the electron. ARCADIUS PIEKARA and BRUNO PIEKARA: The dipole moment of acetic anhydride and some anomalies presented by the acids of the fatty series. G. DÉCHÊNE: Variations with time of the intensity of the current in a semi-conducting substance submitted to a low electromotive force. J. SOLOMON: The relativist theory of atoms with a large number of electrons. JEAN J. TRILLAT: Electronic diffraction by cellulose films. By the use of monokinetic electrons the structure of various cellulose derivatives has been studied: X-rays give no results with these films. A freshly prepared film is amorphous; after some hours very small microcrystals disposed at hazard appear. After some days, or weeks, the entire film is crystallised and is formed of unique crystals. G. LIANDRAT: Attempts at applying the laws of photoelectric emission to photo-elements with an arresting layer. R. DE MALLEMANN and P. GABIANO: The magnetic rotatory power of hydrogen selenide. From the figure obtained, the value $36 \times 10^{-5}$ is found for the atomic rotation of selenium, which is thus higher than that of sulphur, 23·5. L. DÉCOMBE: The influence of temperature on the yield of alternators and of transformers. The use of a refrigerating machine for cooling is not worth while, as the improvement in yield is so small. JEAN AMIEL: The action of chlorates on sulphur, selenium and tellurium. A study of the conditions producing spontaneous inflammation of mixtures of chlorates of the alkaline earths with sulphur. MARCEL CHAUSSAIN and HENRI FOURNIER: The passivity of magnesium in solutions of chromic anhydride and its chemical scouring after corrosion. The marked effect of the presence of impurities in the chromic acid, especially small amounts of sulphuric acid, is shown by experiment. MALAPRADE: The acidimetric method of determining formol and sulphites. TIFFENEAU, E. DITZ and MLLE. B. TCHOUBAR: Molecular transpositions in the dimethylcyclohexane series, with or without reduction of the ring, by the removal of halogen from the chlorhydrins and by isomerisation of the epoxides. CH. PRÉVOST, P. DONZELOT and E. BALLA: The Raman effect, molecular refraction and constitution. The supposed α-benzylcyclohexene. A repetition of the work of Auwers and Treppmann on the dehydration of phenylcyclohexylcarbinol, from which the conclusion is drawn that the product is not α-benzylcyclohexene but benzylidenecyclohexane. P. VIÈLES: The dilactylic acids and their anhydride. MLLE. M. TH. FRANÇOIS: The setting of the *Aleurites* oils (China wood oil) by the halogen compounds of antimony. H. BRASSEUR, A. DE RASSENFOSSE and J. PIÉRARD: The crystallographic study of barium nickelocyanide. Hydrated barium nickelocyanide and barium platinocyanide are completely isomorphous. D. SCHNEEGANS: The geological constitution of the Chabrières massif (Hautes-Alpes). MICHEL PERTESSIS: The radioactivity of the mineral springs of Greece. HENRY HUBERT: The general circulation of atmospheric air above Indo-China. R. BUREAU: The direction of the summer sources of atmospherics. L. EBLÉ and G. GIBAULT: The values of the magnetic elements at the Val-Joyeux (Seine-et-Oise) Station on January 1, 1934. D. BARBIER: Theoretical remarks on the distribution of ozone in the atmosphere. PAUL CORSIN: The characters of *Grammatopteris Rigolloti*. ANDRÉ DAUPHINÉ: The different modes of thickening of the membrane in vascular plants. LUIGI MANZONI and AGOSTINO PUPPO: The transpiration of wheat as a function of climatic factors. A. MAUBLANC and L. ROGER: A new rust of the coffee plant of the Cameroons. This plant disease is clearly distinct from *Hemileia vastatrix* and is given the provisional name of *Uredo coffeicola*. PH. JOYET-LAVERGNE: Cytoplasmic sexualisation in yeasts with heterogamic conjugation. ET. RABAUD and MLLE. L. VERRIER: The air bladder of the loach, *Cobitis barbatula*. Y. LE GRAND: Dazzle in yellow light. MAURICE FONTAINE: Absorption and fluorescence spectrography of fabreine. MME. ANDRÉE DRILHON-COURTOIS: The regulation of the mineral concentration of the internal medium in some Crustacea and their adaptation to changes in salinity. PIERRE GIRARD and MLLE. MARGUERITE LOURAU: First indications on the nature and physical properties of an antibody: electrophoresis of hæmolytic sera. R. GUILLEMET, C. SCHELL and P. LE FUR: Fermentable glucides, alcoholic fermentation and gas-production in bread-making. A. W. SELLARDS and J. LAIGRET: The duration of the immunity resulting from vaccination against yellow fever. Experiments are described proving the immunity conferred by vaccination is of at least two years' duration.

## SYDNEY

Linnean Society of New South Wales, November 29. F. A. CRAFT: The coastal tablelands and streams of New South Wales. Some of the highland features form surfaces of greater or lesser relief which are not surrounded by higher country, while others consist of plains almost enclosed by higher land, with a sharp break of slope in the passage from lower to higher surfaces; in addition, the plateau edges are distinguished from the gentle regional slopes of the summit planes, and the growth of the plateau is traced by reference to relic scenery preserved by basalt flows. The streams of the region are classified according to their approximation to profiles of equilibrium, and the extent of canyons along their courses. LILIAN FRASER: The Mycetozoa of New South Wales. Eighty-eight species and varieties of Mycetozoa are listed, most of them from the environs of Sydney and the adjacent highlands. Very few records are known for the western parts of the State, probably due to the relatively hot and dry climate being unsuitable for their development. PEARL R. MESSMER: A new species of *Pterostylis*. A new species of *Pterostylis* is described from Fitzroy Falls, N.S.W. It suggests affinities with *P. grandiflora*, *P. ophioglossa* and *P. reflexa*, and may have originated as a hybrid between the first two of those species. G. A. WATERHOUSE: Australian Hesperiidæ. (4) Notes and descriptions of new forms. Nine new races are described. As the result of an examination of type specimens in the British Museum by Brigadier W. H. Evans, it is shown that *Taractrocera anisomorpha*, Lower, and *T. ina*, Waterhouse, are full species and not races of species found in Timor and New Guinea. Further notes are given on *flavovittata*, Latreille, and this species and its allies are now placed in *Ocybadistes*, Heron, instead of *Padraona*, Moore. The remarkable life cycle of two years of *Hesperilla chaostola*, Meyrick, is described.

## VIENNA

Academy of Sciences, January 11. ELISABETH KARA-MICHAILOVA: Nuclear γ-radiation excited artificially. A large number of elements were subjected to intense

radiation with α-particles of polonium to ascertain to what extent they emitted a hard nuclear γ-radiation under such treatment. Positive results were shown by B, N, Al, Na, Mg and especially Be. HERBERT HABERLANDT, BERTA KARLIK and KARL PRZIBRAM: Synthesis of the green, low-temperature fluorescence of fluorite. Ytterbium is found to be the source of this fluorescence. HERMANN WENDELIN: Abel's groups. ALEXANDER KÖHLER and WILHELM FREH: Geological-petrographic studies on the igneous rocks of the Lower Austrian forest region and its neighbourhood (3). Results are given of analyses of granite from Schrem, quartz-mica-diorite from Gebhart, and kersantite from the Loja valley above Steinbruch. F. GRÜTER, A. STÄHELI and E. STEINACH: Removal of sterility from animals (oxen, cows, pigs) by the female sexual hormone. A single administration of this hormone suffices to render sterile animals capable of breeding. ALFRED MÜLLER: Baire's theorem. RUDOLF WAGNER: Prefloration polymorphism and polygamia in *Reineckea carnea* (Ardr.) Kth.

Jan. 18. HERBERT HABERLANDT: Fluorescence analysis of minerals. The presence of rare earths in certain scheelites and zircons, and that of uranium in certain scapolites is detectable by means of the fluorescence spectrum. ROBERT SCHWINNER: Geology of Eastern Styria (i); structure of the mountains about Vorau. HANS PRZIBRAM: (1) Skeletal transitions in regenerating *Sphodromantis*-antennæ. (2) Skeletal transitions in regenerating cricket-antennæ. HEINZ TRAMPUSCH: Influence of endocrine glands on the regenerate in vertebrates.

Jan. 25. FRIEDRICH KÜMEL: Crystalline facies in the Rosalien mountains: eclogite and amphibolite. KARL PRZIBRAM: Plasticity and hardness of alkali halide crystals (2). The author's results are compared with those obtained by other methods by Reis and Zimmermann, and by Goldschmidt. ELISABETH KARA-MICHAILOVA: Luminous intensity of the air caused by α-particles of various ranges. The variation of intensity with the range of the α-particles follows a course similar to that of the ionisation curve. OTTO WETTSTEIN: Results of the Austrian biological expedition to Costa Rica in 1930: Amphibia and reptiles. GUSTAV GÖTZINGER and HELMUT BECKER: New geological-stratigraphic investigations in the Wienerwald.

## Forthcoming Events

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

### Monday, May 14

ROYAL GEOGRAPHICAL SOCIETY, at 8.30.—W. Rickmer Rickmers: "Ajaristan and Lazistan".

### Tuesday, May 15

INSTITUTE OF PHYSICS, at 4.15.—(at the Royal Institution, Albemarle Street, W.1).—Annual General Meeting. Sir Henry Lyons: "Physics and Science Museums". (Presidential Address.)

BEDFORD COLLEGE FOR WOMEN, at 5.15.—Dr. Werner Brock: "Introduction into Contemporary German Philosophy" (succeeding lectures on May 16 and 18)*.

GRESHAM LECTURES IN ASTRONOMY, at 6.—(at Gresham College, Basinghall Street, E.C.2). Arthur R. Hinks: "Times, Dates and Calendars" (succeeding lectures on May 16, 17 and 18).*

### Wednesday, May 16

ROYAL METEOROLOGICAL SOCIETY, at 5.—Dr. G. C. Simpson: "World Climate during the Quaternary Period".

FARADAY SOCIETY, at 5.30.—(at the Royal Institution, Albemarle Street, W.1).—Sir William Bragg: "Molecule Planning" (Spiers' Memorial Lecture).

ROYAL SOCIETY OF ARTS, at 8.30.—Dr. C. E. Kenneth Mees: "Some Photographic Aspects of Sound Recording" (Sir Henry Trueman Wood Lecture).

### Thursday, May 17

LONDON MATHEMATICAL SOCIETY, at 5.—(in the rooms of the Royal Astronomical Society, Burlington House, W.1).—Prof. E. A. Milne: "World-Gravitation by Kinematic Methods".

### Friday, May 18

BEDSON CLUB, ARMSTRONG COLLEGE, NEWCASTLE-UPON-TYNE, at 6.30.—Prof. G. G. Henderson: "Gutta Percha, Balata and Caoutchouc" (Twenty-sixth Bedson Lecture).

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ROYAL INSTITUTE OF PUBLIC HEALTH, May 15–20.—Annual Congress to be held at Norwich. Alderman H. N. Holmes, president.

ASSOCIATION OF TEACHERS IN TECHNICAL INSTITUTIONS, May 19–22.—Twenty-fifth conference to be held at Middlesborough.

## Official Publications Received

### GREAT BRITAIN AND IRELAND

Imperial Bureau of Animal Genetics. A Bibliography of the Works of James Cossar Ewart. Compiled by Dr. J. H. Ashworth and Dr. F. Fraser Darling. (Supplement to "Animal Breeding Extracts", Vol. 1.) Pp. xi. (Edinburgh and London: Oliver and Boyd.) 6*d*. net.

Report by the Hydrographer of the Navy on the Surveys carried out by H.M. Naval Surveying Service, and on the Work of the Hydrographic Department for the Year 1933. Pp. vi. (London: Admiralty.)

Memoirs of the Cotton Research Station, Trinidad. Series A, Genetics, No. 6: (a) Further Experiments on the Inheritance of the Crinkled Dwarf Mutant of *G. barbadense*, by S. C. Harland; (b) Two Interspecific Hybrids between Asiatic and New World Cottons, by A. Skovsted. Pp. 30. 2*s*. 6*d*. Series A, Genetics, No. 7: The Inheritance of Leaf Shape in Asiatic *Gossypiums*. By J. B. Hutchinson. Pp. 78. 2*s*. 6*d*. (London: Empire Cotton Growing Corporation.)

### OTHER COUNTRIES

The Journal Hyderabad Geological Survey. Vol. 2, Part 2, Water-Supply Paper No. 1: Geology of the Underground Water Resources of the Hyderabad State, and Notes on Well Sinking. By Capt. Leonard Munn. Pp. vii+204+16 plates. (Lingsugar: Hyderabad Geological Survey.) 5 rupees.

Proceedings of the Sugar Cane Investigation Committee. Vol. 4, Part 4: Progress Reports for July to December 1933. Pp. 201–254. (Trinidad: Imperial College of Tropical Agriculture.)

Commonwealth of Australia: Council for Scientific and Industrial Research. Bulletin No. 77: Studies on the Phosphorus Requirements of Sheep, 1: The Effect on Young Merino Sheep of a Diet deficient in Phosphorus, but containing Digestible Proteins and Vitamins. By Sir Charles J. Martin and A. W. Peirce. Pp. 44+2 plates. Bulletin No. 78: Methods for the Identification of the Light-coloured Woods of the Genus Eucalyptus. By H. E. Dadswell, Maisie Burnell and Audrey M. Eckersley. (Division of Forest Products, Technical Paper No. 12.) Pp. 60+41 plates. (Melbourne: Government Printer.)

The Wistar Institute Style Brief: a Guide for Authors in preparing Manuscripts and Drawings for the most Effective and Economical Method of publishing Biological Research. Pp. 169 (37 plates). (Philadelphia: Wistar Institute.) 2 dollars.

Jahresbericht der Hamburger Sternwarte in Bergedorf für das Jahs 1933. Pp. 21+4 plates. Zweites Bergedorfer Sternverzeichnir 1930·0 enthaltend die mittleren Örter von 4599 Sternen (Eros-Anhaltsternen 2. Ordnung für die Opposition 1930–31) nach photographischen Aufnahmen mit dem AG-Astrographen in den Jahren 1930 und 1931. Herausgegeben von Dr. Richard Storr. Pp. vi+78+1 plate. Sammlung von Hilfstafeln der Hamburger Sternwarte in Bergedorf. Z: Formeln zur geographischen Ortsbestimmung (zum Gebrauch beim Astronomischen Praktikum an der Hamburgischen Universität). Pp. ii+14. H: Formeln und Hilfstafeln zur Reduktion Photographischer Himmelsaufnahmen, Teil 2. Pp. iii+64. (Bergedorf: Hamburger Sternwarte.)

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