

light. You may also explain the peculiar medical observation that therapeutic radium effects in parts of the human body not covered, specially in the face, are often not of long duration—for the face is exposed to the counteracting visible rays of daylight.

We notice here a connection of our subject with a department of great practical importance. For all therapeutic effects of X-rays, radium rays, and mesothorium rays would, according to this view, be effects only of ultra-violet light produced by the stopping of these rays in the human body, and the special character of the radium- and mesothorium- and X-ray treatment would consist mainly in the carriage into the interior of the body, by the rays, of the ultra-violet light, which is not confined to the surface of the body, but is produced at every place where any of the entering rays are stopped. You may notice further that this view of the medical ray-effects presents a heuristic method for the treatment itself, which up to the present followed quite fortuitous and merely empirical paths. For it may be hoped that treatment by radio-active substances will be useful in every disease in which ultra-violet light has been proved to be efficient in some degree; you will avoid such treatment in the well-known cases in which light of short wave-lengths is noxious, and you may be justified in substituting an ultra-violet light treatment where radium or mesothorium is not obtainable. At the same time it becomes evident why the treatment of certain diseases by the  $\beta$  rays has effects very similar to those produced by *fulguration*—that is, by the light of very strong sparks; the efficient agent is in both cases the ultra-violet light.

But it cannot be a physicist's task to enter too far in medical questions: it was only my intention to show how interesting are some of the problems which are connected with the salts coloured by kathode rays.

#### UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

By the will of the late Dr. T. Bell, head of the firm of Messrs. Pyman, Bell, and Co., coal exporters and shipowners, of Newcastle, the sum of 3000*l.* is bequeathed to the Armstrong College, Newcastle.

THE report of the proceedings of the general committee for promoting the establishment of an Imperial College of Tropical Agriculture is referred to in the *Pioneer Mail* of December 4. It is stated that Mr. R. N. Lyne, Director of Agriculture, Ceylon, says he thinks that the West Indies will now support Ceylon's claims to be the home of the college. The committee resolved to take steps to raise 40,000*l.* for building and endowing the college, of which 20,000*l.* should be asked from the Governments concerned, including India, and the remainder be raised by public subscriptions, provided Government contribute the share stated. It was also resolved to collect 5000*l.* for the erection of a hotel for European students. The committee has not committed Ceylon for the site; at the same time it favoured that country.

SEVERAL bequests for higher education in the United States are announced in the issue of *Science* for December 18 last. Two gifts of 20,000*l.* each have been made for the development of a graduate course in preparation for business and business administration at the Sheffield Scientific School of Yale University. The two donors are graduates of the University. 2000*l.* has been given to Smith College by Mr. and Mrs. A. J. White, of Brooklyn. Half of the money is to be applied toward payment for recent improvements on the Lyman Plant House. A be-

quest of 2000*l.* to St. Lawrence University at Canton, N.Y., is made under the will of Mrs. Kate A. L. Chapin, of Meriden, Conn. Prof. and Mrs. Frederic S. Lee have given to Columbia University the sum of 4000*l.* to establish a fund for the use of the department of physiology.

#### SOCIETIES AND ACADEMIES.

LONDON.

**Royal Meteorological Society**, December 16.—W. F. Stacey: The distribution of relative humidity in England and Wales. The author has prepared mean monthly and annual maps of relative humidity based on the 9 a.m. observations made at more than ninety stations during the ten years 1901–1910. An examination of these maps shows that in winter the air over the interior of the country is more moist than that over the coastal regions; that the minimum relative humidity occurs earlier in the year in the western parts of the country than in the eastern; that in summer the air over the interior of the country is drier than that over the coastal regions; and that the smallest range of humidity is found in the west and the greatest in the interior towards the east. The distribution of temperature is the chief determining factor in the distribution of relative humidity; while sea influence, the direction and character of prevailing winds, the configuration of the country all have important effects on temperature, and therefore on relative humidity.

**Geological Society**, December 16.—Dr. A. Smith Woodward, president, in the chair.—Prof. W. M. Flanders Petrie: The Palæolithic age and its climate in Egypt. The classes of worked flints peculiar in Egypt are:—(1) Irregular, with broad unregulated fractures. (2) Rounders, flaked in all directions to an edged disc. (3) Hoofs, very thick, rudely domed with an obtuse edge. (4) Lunes, with obtuse edges. (5) Crescent scrapers. Irregular flints, similar to those from St. Acheul, are found in high Nile gravels. The regular European types occur exactly like those classed as Chellean and Acheulian. The Mousterian forms are so often found in various periods, that they cannot be assigned without evidence of age. The Aurignacian survive into the early civilisation. The large class of flints from the Fayum desert comprises all the Solutrean types, and also Robenhausian forms. The flakes of the early civilisation (8000 to 6000 B.C.) are identical with Magdalenian. Views of the Nile cliffs show the general nature of the country and conditions. Successive changes of level are indicated by (1) the collapse of immense drainage-caverns far below present level; (2) the filling of valleys with debris up to 650 ft. above the present sea-level; (3) the gouging-out of fresh drainage-lines through the filling; and (4) rolled gravels on the top of cliffs 800 ft. above sea-level, since when there has been no perceptible denudation by rain. The great extent of these elevations and depressions is likely to be connected with similar movements at Gibraltar, which are believed to synchronise with the movements of glacial periods in northern Europe. The evidence of the flint ages agrees with this connection.

PARIS.

**Academy of Sciences**, December 14.—M. P. Appell in the chair.—E. Branly: Intermittent conductivity of thin dielectric plates. A study of the conductivity of a thin plate of dielectric induced by the passage of a rapidly alternating current.—P. Duhem: The hydrodynamical paradox of M. Brillouin.—M. C. Jordan was elected vice-president for the year 1915.—M. Bazy: Statistical note on tetanus. A study of 129

cases of tetanus occurring in 10,896 wounded. In eight cases, the disease appeared fourteen or more days after the wound, one as late as twenty-seven days. Stress is laid on the valuable preventative action of the anti-tetanus serum. In hospitals where preventative injections have been made systematically the tetanus mortality is 0.42 per cent.; in hospitals where the injection is made in suspected cases only the mortality is 1.28 per cent. If only a limited amount of the serum is at the disposal of the surgeon, the amount injected may be safely reduced from 10 c.c. to 2 c.c.—F. **Gonnessiat**: Solar eclipses: formula for the correction of the elements.—Henri **Villat**: The paradox of d'Alembert and the theory of discontinuous movements.—H. **Bertin-Sans** and Ch. **Leenhardt**: The localisation of projectiles in the body by radiography.—O. **Lignier**: The staminal glands of the Fumaraceæ and their signification.—G. **Arnaud**: The suckers of *Meliola* and *Asterina*.—P. **Mazé**: Nutritive exchanges in plants. The rôle of the protoplasm.—Jules **Amar**: Relations between the feeding and strength of Arabs. Arabs were fed on two classes of diet of equal heat value, one following native custom the other French. The former proved more advantageous from the point of view of utilisation of the food in the form of muscular work.—J. **Blier**: Bovine hæmoglobinuria of Chili.—A. **Trillat** and M. **Fouassier**: The influence of the radio-activity of the air on the microbial water particles in suspension in the atmosphere.

## NEW SOUTH WALES.

**Linnean Society**, October 28.—Mr. W. S. Dun, president, in the chair.—T. G. **Sloane**: Revision of Australian Carabidæ. Part v. Part v. deals with the Australian section of the tribe *Helluonini*, comprising seven extra-Australian, and twelve Australian genera, with twenty-seven species. Four genera and seven species are described as new.—E. **Petersen**: Australian Neuroptera. Part i. Two genera and five species are proposed as new, and supplementary information, with illustrations, of seven species previously described, is given—the entire series being referable to six families.—Dr. A. J. **Turner**: The Lepidoptera of Ebor Scrub, N.S.W. Ebor is a small township, fifty miles N.N.E. of Armidale, on the eastern edge of the New England Plateau, at an elevation of 4000 ft., with an abundant rainfall. Representatives of thirty-one species of Lepidoptera (fam. Arctiadae, Geometridæ, Pyralidæ, Tortricidæ, Tineidæ) were collected in the scrub. Six genera and twenty-four species are described as new.—L. **Harrison**: Some Pauropoda from New South Wales. Four species of Pauropus, and one of Eurypauropus, are described as new, with observations on the development of one species of these delicate little Myriapods, now added to the Australian fauna.—T. G. **Sloane**: Description of a new tiger-beetle from North-Western Australia.

## BOOKS RECEIVED.

Optic Projection: Principles, Installation, and Use of the Magic Lantern, Projection Microscope, Reflecting Lantern, Moving Picture Machine. By Prof. S. H. Gage and Dr. H. P. Gage. Pp. ix+731. (Ithaca, N.Y.: Comstock Publishing Company.) 3 dollars.

Exercises in Arithmetic and Mensuration. By P. Abbott. Pp. ix+524+Answers. Pp. 86. (London: Longmans and Co.) 4s. 6d.

Nature Notes for Ocean Voyagers. By Captains A. Carpenter and D. Wilson-Barker. Pp. xvi+181. (London: C. Griffin and Co., Ltd.) 5s. net.

Bacon's Sixpenny Contour Atlas. South-East England Edition. Pp. 41. (London: G. W. Bacon and Co., Ltd.)

NO. 2357, VOL. 94<sup>1</sup>

Who's Who, 1915 Pp. 2376. (London: A. and C. Black, Ltd.) 15s. net.

Flies in Relation to Disease. Blood-sucking Flies. By Dr. E. Hindle. Pp. xv+398. (Cambridge University Press.) 12s. 6d. net.

The Journal of the Institute of Metals. Vol. xii. Edited by G. Shaw Scott. Pp. x+392. (London: Institute of Metals.) 21s. net.

## DIARY OF SOCIETIES.

MONDAY, JANUARY 4.

ARISTOTELIAN SOCIETY, at 8.—Berkeley's Doctrine of Esse: Prof. C. Lloyd Morgan.

SOCIETY OF CHEMICAL INDUSTRY, at 8.

TUESDAY, JANUARY 5.

RÖNTGEN SOCIETY, at 8.15.—*Adjourned Discussion*: Localisation of Foreign Bodies by X-Rays.

WEDNESDAY, JANUARY 6.

GEOLOGICAL SOCIETY, at 8.—The Silurian Inlier of Usk: C. I. Gardiner.—Some Observations on Cone-in-Cone Structure and their Relation to its Origin: S. R. Haselhurst.

FRIDAY, JANUARY 8

ROYAL ASTRONOMICAL SOCIETY, at 5.

GEOLOGISTS' ASSOCIATION, at 8.—The Value of Graptolites to the Stratigraphical Geologist: Gertrude L. Elles.

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