

of Leeds University, who will deliver a course of four lectures on "X-Rays and Crystals."

DR. R. S. ROGERS, a graduate of Edinburgh University, has been appointed lecturer on forensic medicine in the University of Adelaide, and Dr. Swift succeeds Dr. W. T. Hayward as lecturer on clinical medicine in the same University.

THE committee of Livingstone College have decided to appoint Dr. L. E. Wigram to succeed Dr. C. F. Harford as principal of Livingstone College when the latter resigns his post at the end of July. Dr. Wigram was educated at Harrow School, Trinity College, Cambridge, and St. Thomas's Hospital, and he is a graduate in medicine and arts of the University of Cambridge. He was formerly a medical missionary at Peshawar, on the north-west frontier of India, under the Church Missionary Society.

IN the House of Commons on Monday, the Chancellor of the Exchequer explained his Budget proposals. The education grant is to be reconstituted on the principle of making a distinction between the richer and the poorer areas, and between the areas that spend much and those that spend little on education. The increased cost to the Exchequer of the education grant will be 2,750,000*l.*, but this year the grant will be confined to the necessitous school areas. The Government is to contribute one-half of the cost of the feeding of hungry school children, and also to make grants for physical training, open-air schools, maternity centres, and technical, secondary, and higher education. Referring to these grants, Mr. Lloyd George said:—"The grants for technical, secondary, and higher education are to make it more accessible to the masses of the children, and to extend its sphere of influence where children show any aptitude to take advantage of it. We compare very unfavourably with Germany and the United States of America in this respect. There there is adequate provision for technical training, secondary and higher training for every child who shows any special gift for taking advantage of it, and I consider that this fact is a greater menace to our trade than any arrangements of tariffs. We propose that there should be a very substantial grant for this purpose which will include a grant for pensions for secondary-school teachers in order to attract the best men to that most important profession. There will be a grant for the special training of teachers already in schools in subjects specially appropriate to rural areas, manual instruction, cookery, physical exercise, and commercial subjects. The total cost for the first year will be 560,000*l.* for these grants, and 282,000*l.* for the other grants which I mentioned. That will be for the first full year, and will be for England and Wales." There will be a special grant of 750,000*l.* for public health purposes in connection with tuberculosis, nursing, and pathological laboratories. Upon the subject of laboratories, Mr. Lloyd George said:—"Another deficiency has been exposed in our health service by the operation of the Insurance Act. There is no provision for the scientific diagnosis of disease. In Germany, in almost every town, and I think in France, you have pathological laboratories which are of enormous assistance to doctors in ascertaining the real character of a disease when they are in any doubt upon the subject. There are a few boroughs in the United Kingdom where something has been done—even in London—but we propose to make a grant for the purpose of aiding the local authorities to set up these laboratories throughout the United Kingdom."

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, April 30.—Sir William Crookes, O.M., president, in the chair.—Prof. B. Moore: The presence of inorganic iron compounds in the chloroplasts of the green cells of plants, considered in relationship to natural photo-synthesis and the origin of life.—Dr. J. C. Willis: The lack of adaptation in the Tristichaceæ and Podostemaceæ.—R. P. Gregory: The genetics of tetraploid plants in *Primula sinensis*. The paper describes results of experiments with two giant races of *Primula sinensis*, which have been shown to be in the tetraploid condition—that is, the plants have 4x (48) chromosomes in the somatic cells and 2x (24) chromosomes in the gametic cells, whereas in the ordinary (diploid) races of the species the numbers are 2x (24) and x (12) respectively. The result of most general interest is the discovery that reduplication of chromosomes has been accompanied by reduplication of series of factors, so that, whereas in the diploid zygote each factor is represented twice, AA; in the tetraploid zygote it is represented four times, AAAA; and there are three distinct hybrid types, namely, AAAa, AAaa, and Aaaa. The reduplication is made manifest by the occurrence of F₂ ratios in the form 15D:1R, when in the diploid races the ratio is 3D:1R. This result recalls those obtained by Nilsson-Ehle in oats and wheat, and by East in maize, but in the tetraploid *Primulas* the reduplication affects not merely the factors for isolated characters, but all the factors which it has been possible to study.—J. A. Gunn: The action of certain drugs on the isolated human uterus. It has been found that the involuntary contractile tissues (such as the heart, intestine, and uterus) of mammals can be kept excised in Locke's solution at ordinary room temperatures for many hours, while still retaining the power of executing normal rhythmic movements when subsequently placed, under the proper conditions, in oxygenated Locke's solution at body temperature. With this knowledge, it is possible, without difficulty, to perform experiments on certain isolated human tissues, removed in the course of surgical operations; and those experiments can be made under similar conditions to, and therefore entirely comparable with, experiments made on corresponding tissues of those mammals ordinarily used for investigation. In this paper this method of investigation has first been utilised to determine the response of the isolated human uterus to certain drugs.—D. J. Lloyd: The influence of osmotic pressure upon the regeneration of *Gunda ulvae*. *G. ulvae* is capable of living indefinitely in water having an osmotic pressure of more than 2 and less than 33 atmospheres. The rate of regeneration of the posterior end in *G. ulvae* depends on the osmotic pressure of the medium. This osmotic pressure has an optimum value for regeneration at 18 atmospheres, i.e. just below that of sea-water, and limiting values at 5 and 33.5 atmospheres. Restoration of lost parts in *G. ulvae* is brought about entirely by the undifferentiated parenchyma cells which migrate to the region of the wound and build up the lost parts.—Surg.-Gen. Sir D. Bruce, Major A. E. Hamerton, Capt. D. P. Watson, and Lady Bruce: (a) *Glossina brevipalpis* as a carrier of trypanosome disease in Nyasaland. (b) Trypanosome diseases of domestic animals in Nyasaland. *Trypanosoma pecorum*. Part iii.—Development in *Glossina morsitans*.—H. E. Armstrong and H. W. Gosney: Studies on enzyme action. XXII.—Lipase. (IV).—The correlation of synthetic and hydrolytic activity.

Zoological Society, April 21.—Dr. Henry Woodward, vice-president, in the chair.—Surgeon J. C. **Thompson**: Further contributions to the anatomy of the Ophidia.—Rev. T. R. R. **Stebbing**: Crustacea from the Falkland Islands. At intervals during a period of some fifteen years Mr. Rupert Vallentin has used prolonged opportunities for collecting, among other things, the crustacean fauna of the Falkland Islands. An initial report on this subject was made to the society in the year 1900. In January of the present year Dr. Thomas Scott, in the "Annals and Magazine of Natural History," has discussed some of the Copepoda. The contribution now offered has to do chiefly with the Malacostraca. Five new species are proposed.—J. S. **Huxley**: The courtship of the great crested grebe; with an addition to the theory of sexual selection.—S. **Hirst**: The Arachnida (other than spiders) and Myriopoda obtained by the British Ornithologists' Union and Wollaston Expeditions to Dutch New Guinea. The collection is only a small one, but contains two new species of Acari parasitic on mammals and three new species of millipedes. A new species of parasitic mite collected by Prof. F. Forster on various mammals in German New Guinea is also described.—Major J. Stevenson **Hamilton**: The coloration of the African hunting-dog (*Lycaon pictus*).—C. Tate **Regan**: Note on *Aristeus goldiei*, Macleay, and on some other fishes from New Guinea.—Miss A. **Carlsson**: Two species of fossil Carnivora, from the Phosphorites of Quercy, contained in the collections of the Zootomical Institute at Stockholm.

Challenger Society, April 29.—Prof. E. W. MacBride in the chair.—Prof. E. W. **MacBride**: Conditions of cross-fertilisation in the sea. The factors hindering crossing between different species of Echinoderms were discussed.—C. Tate **Regan**: The distribution of antarctic fishes. It was pointed out that the distribution of coast fishes south of the tropics calls for the recognition of three zones—south temperate, sub-antarctic, and antarctic. The subantarctic zone includes the Magellan and Antipodes districts; the antarctic zone the Glacial and Kerguelen districts. Nearly all the antarctic fishes are Nototheniiformes, and nearly all the genera and species are peculiar to the zone; in the subantarctic zone Nototheniiformes are present, but there is also a number of south temperate types.

DUBLIN.

Royal Irish Academy, April 27.—Rev. J. P. Mahaffy, president, in the chair.—Rev. Canon **Lett**: A census catalogue of the mosses of Ireland. Part i. This paper gives a short account of all deceased botanists who have paid any attention to the mosses of Ireland, together with a note of all known publications on the subject, from the Rev. John Ray, whose synopsis (1690) is the earliest work in which Irish mosses are mentioned, down to the present day. The list given by the writer contains the names of 636 mosses indigenous to Ireland, and with each is given the first known and the latest records, together with the date and name of the collection.—W. D. **Haigh**: The Carboniferous volcanoes of Philipstown, in King's County. This paper deals with the small volcanic district of Croghan Hill, north of Philipstown, in King's County. In an area of about four square miles a number of volcanic necks breaks through the Carboniferous Limestone. The ash is interbedded with the limestone at and above the cherty zone which separates the Lower from the Middle Limestone. The volcanic activity was thus contemporaneous with the major outbursts in the Limerick district. The latter portion of the paper deals with the petrography of the igneous rocks, which consist chiefly of dolerites and basalts passing into the more basic variety, lim-

burgite. Glomero-porphyrific structure is a common feature of these intrusive rocks.—A. C. **Forbes**: Tree growth (in connection with the Clare Island Survey). Although no plant worthy of the name of tree now exists on Clare Island, abundance of scrub, consisting of oak, birch, mountain ash, holly, hazel, willow, etc., occurs on the east side of the island, suggesting that at no very distant date woodland was more or less general both over Clare Island and the adjacent islands and mainland. Tree remains in the bogs show that pine and birch were originally common on the lower parts of the island, followed at a later date by oak, which is found under mountain peat up to an altitude of 400 ft. The disappearance of this woodland was primarily due to a lowering of the summer temperatures, and an increase of wind off the sea, probably brought about by a higher sea-level in recent times. The original forest flora of the island undoubtedly dates back to a time when a connection with the mainland existed on the south-east, which was probably not interrupted until oak, hazel, and other species had established themselves, and suppressed or took the place of the pine of an earlier period. The most remarkable omissions from the present forest flora of the island are ash and elder, the latter being not only common on the mainland, but difficult to eradicate from grazed or uncultivated land.—G. P. **Farran**: Tunicata and Hemichorda (in connection with the Clare Island Survey). The paper summarised the published records of the group, together with some additional records added in the course of the Clare Island Survey.

PARIS.

Academy of Sciences, April 27.—M. P. Appell in the chair.—The **President** announced the death of Prof. Suess, foreign associate.—H. **Deslandres**: Experimental research of a solar electrical field. Stark has recognised a new effect of the electric field on the light emitted by the canal rays; the bearing of the Stark effect on the study of the solar radiations is fully discussed.—Fred **Wallerant**: The mobility of the molecules in a solid crystal. A crystal of potassium nitrate is fused between two glass plates and allowed to solidify. It is now heated to a temperature well below its melting point, and slightly compressed by pressure at one point of the plate. New crystals appear which grow at the expense of the original crystal, and there is no relation between the orientations of the new and the old crystals. From this the author is led to modify his views on the polymorphism of camphor, which he now holds to be trimorphic and not quadrimorphic.—F. **Becke** was elected a correspondent for the section of mineralogy in the place of the late M. Rosenbusch.—Henri **Chretien**: A mirror astrolabe. The prism of the ordinary instrument is replaced by two mirrors placed at an angle of 60°, one being fully silvered and the other half silvered. The arrangement possesses the following advantages: homocentricity of the two rays, increase of power of definition, possibility of constructing large astrolabes cheaply, and the suppression of the difficulties arising from the want of homogeneity of the glass of the prisms.—J. **Clairin**: Certain systems of partial differential equations of the second order with two independent variables.—W. **Blaschke**: New evaluation of distances in functional space.—Marcel **Riesz**: An interpolation formula for the differential of a trigonometrical polynomial.—Bertrand **Gambier**: The surfaces susceptible of being formed in several different ways by the displacement of an invariable curve.—Louis **Roy**: The motion in three dimensions of indefinite viscous media.—F. **Jager**: The application of the method of Ritz to certain problems of mathematical physics, and in particular to

the tides.—Léon and Eugène **Bloch**: A new absorption spectrum of oxygen in the extreme ultra-violet. The absorption of air in the extreme ultra-violet commences at a wave-length of 1957, and is shown by a spectrum of regular bands, most probably belonging to oxygen. It is shown that these bands are due to absorption and not to fluorescence.—Thadée **Peczalski**: The differential scale of temperatures.—André **Léauté**: The propagation of surges along a heterogeneous electric line.—Jean **Perrin**: The osmotic compressibility of emulsions considered as fluids with visible molecules. In a previous communication it has been shown that the gas laws apply to dilute emulsions composed of particles of the same magnitude. In the present paper this conception is applied to strong emulsions, making use of Van der Waals equation.—René **Constantin**: The experimental study of the osmotic compressibility of emulsions. The experimental work of the preceding paper. The work was done with uniform spherical grains of radius $0.33\ \mu$. Instantaneous photographs were taken of a column of emulsion $3\ \mu$ to $5\ \mu$ thick, with a horizontal microscope, sufficient time, three to four days, having been allowed for a state of equilibrium. Up to a certain concentration the fluid follows the law of Van der Waals, but above 2.4 per cent. the internal pressure diminishes, corresponding to a repulsive action between the grains.—A. **Portevin**: Re-heating and annealing after tempering of the alloys of copper and tin and copper and zinc.—Georges **Baume**: Remarks on the mechanism of the chemical reaction.—Auguste **Conduché**: The action of chloroform on metallic sulphates. Method of preparation of anhydrous chlorides. At temperatures above 300°C . chloroform vapour converts the sulphates of various metals into the anhydrous chloride. The reaction with copper sulphate at 300°C . gives pure cupric chloride; other metals require a higher temperature.—Georges **Tanret**: An alkaloid extracted from *Galega officinalis*. The alkaloid is called galigine, and has the composition $\text{C}_6\text{H}_{13}\text{N}_2$. The base is crystalline, and gives crystallised salts. M. **Picon**: The preparation of pure butine. Pure butine (ethylacetylene) has been prepared by the action of ethyl iodide upon sodium acetylide in liquid ammonia at a temperature of -40°C . It was purified by fractional distillation, boils at 8.3° , and melts at -137°C . Its density at 11°C . was found to be 2.47, as against 2.41 theoretical.—M. **Lespieux**: Some derivatives of octadiene-2:6-diol-1:8. The addition products with bromine, iodine, and hydrogen are described. Hydrogen in the presence of platinum black gives a mixture of the saturated glycol and primary octyl alcohol.—E. **Léger**: The optical isomerides of homonataloin and of nataloin and their reciprocal transformations.—J. L. **Vidal**: Cultural experiments on the vine.—Jacob **Eriksson**: Rust in the seeds of cereals.—R. **Marcille**: The nitrogenous materials of grape must. Both fixed organic nitrogen and volatile ammoniacal or amino-nitrogen are present in relative and absolute proportions which are extremely variable. The quantities are sufficient to ensure regularity in the fermentation.—E. **Maurel**: The influence of climate and season on food requirements. The amount of food required becomes less as the external temperature rises, on account of the smaller heat losses by the skin.—Etienné **Rabaud**: Researches on telegony. From experiments on mice the author is inclined to conclude that telegony is a purely imaginary phenomenon.—Fred **Viès**: Remarks on the spectral structure of hæmoglobin substances. There are indications that the bands given by this class of substances can be represented by a series similar to that shown by Deslandres to hold for the nitrogen bands.—M. **Vasticar**: The internal auditive region of

Corti's organ.—O. **Laurent**: Nervous accidents produced at a distance by projectiles used in war. A discussion of the possibility of nervous diseases being produced by shock without actual wounds by the projectile.—Gabriel **Bertrand**: Silver as a possible stimulant of growth in *Aspergillus niger*. In connection with the effects of traces of zinc and others metals on the growth of moulds, the theory of toxic stimulation has been put forward. Silver salts are known to exert a poisonous action on moulds, and experiments are here described to see if there is a critical concentration at which silver salts exert a stimulating effect on the growth. At no concentration was a stimulating effect observed, and the author contends that the theory of toxic stimulation is improbable.—M. **Javillier**: The utility of zinc for the growth of *Aspergillus niger*, cultivated in deep media. It has been alleged that when this mould is cultivated in deep instead of in shallow layers the favourable effect of zinc vanishes. Experiments are described by the author proving that this is not the case.—Em. **Bourquelot** and M. **Bridel**: The biochemical synthesis of the α -monoglucoside of glycol, by the aid of α -glucosidase. Starting with a solution of *d*-glucose, glycol, and an aqueous extract of low yeast, only the monoglucoside was obtained. Its purification and properties are given in detail.—Charles **Jacob** and Paul **Fallot**: The geology of Montsech, in Catalonia.—F. **Roman**: The Rhinocerotidae of the Mainz basin.

BOOKS RECEIVED.

- The Science Reports of the Tôhoku Imperial University, Sendai, Japan. Second series. (Geology.) Vol. i., No. 4. Vol. i., No. 5. (Sendai, Japan: Z. P. Maruya and Co., Ltd.)
- Conseil Permanent International pour l'Exploration de la Mer. Rapports et Procès-Verbaux des Réunions. Vol. xx. Rapports. Pp. iv+228. Bulletin Statistique des Pêches Maritimes des Pays du Nord de l'Europe. Vol. vii. Pour l'Année 1910. (Copenhague: F. Host et Fils.)
- New Zealand. Department of Mines. Geological Survey Branch. Bulletin No. 16 (new series). The Geology of the Aroka Subdivision, Hauraki, Auckland. By J. Henderson, assisted by J. A. Bartrum. Pp. vii+127+plates. (Wellington: J. Mackay.)
- Canada. Department of Mines. Geological Survey Guide Books. No. 1 (two parts), Nos. 2, 3, 4, 5, 8 (three parts), 9 and 10. (Ottawa: Government Printing Bureau.)
- The Principles of Inorganic Chemistry. By W. Ostwald. Translated by Prof. A. Findlay. Fourth edition. Pp. xxxiii+836. (London: Macmillan and Co., Ltd.) 18s. net.
- Bulletin of the Argentine Meteorological Office. No. 2. First part. The Laws of the Evaporation of Water from Pans, Reservoirs and Lakes, Sand, Soils, and Plants. By Prof. F. H. Bigelow. Pp. 147.
- No. 3. The Thermodynamics of the Circulation and the Radiation of the Earth's Atmosphere. By Prof. F. H. Bigelow. Pp. 106. (Buenos Aires.)
- Elementary Theory of Equations. By Prof. L. E. Dickson. Pp. v+184. (New York: J. Wiley and Sons, Inc.; London: Chapman and Hall, Ltd.) 7s. 6d. net.
- Cape Astrographic Zones. Vol. i. Commenced under the direction of Sir David Gill. Completed and prepared for press under the supervision of S. S. Hough. Pp. li+430. (London: H.M.S.O.; Wyman and Sons, Ltd.) 15s.
- Manual of the New Zealand Mollusca. By H. Suter. Pp. xxiii+1120. (Wellington, N.Z.: J. Mackay.)