

constructed is of the order of $2\frac{1}{2}$ million volts. Wooden poles give additional insulation to earth, but cannot be relied on to withstand more than 100–150 kV. per foot. It seems highly probable, therefore, that practically every direct stroke to a live wire will produce some kind of flash-over.

Hence it is necessary to prevent direct strokes or to render flash-overs innocuous. The first can be done by an overhead earthed wire, which proves to be a reasonably effective interceptor; but in places where special protection is required, two earthed overhead wires should be used. In order to secure easy entrance for the current in dry soil, many modern lines are equipped with a 'counterpoise'. This consists of a length of bare cable buried in the ground and attached to the foot of the tower. Each circuit of the new Boulder Dam line in America is equipped with two parallel counterpoises, continuous from tower to tower.

The alternative to lightning-proof construction of the line is to ensure that lightning flash-overs on the line do not interrupt the supply. The best known method of doing this is to use a Petersen coil, which is in general use on the Continent but is less popular in Great Britain and the United States. Alternative methods were also mentioned. In the author's opinion, these methods will prove more popular than the overhead earthed wire, as they are much cheaper. Arc rupturing devices and lightning arrestors can be installed easily on existing unsatisfactory lines.

University Events

BIRMINGHAM.—Dr. Henry Pratt Newsholme, Medical Officer of Health for Birmingham since 1927, has been appointed to the chair of hygiene and public health in succession to the late Sir John Robertson.

CAMBRIDGE.—Prof. E. D. Adrian, Fellow of Trinity College, Foulerton professor of the Royal Society, has been elected as from October 1 to the professorship of physiology which will become vacant by the retirement of Sir Joseph Barcroft.

The subject for the Sedgwick Prize for the year 1940 is: "The Influence of the Idea of Evolution on some Branch of Geological Studies". The essays must be sent to the Registry on or before October 1, 1939.

The examiners consider that the following essays submitted by candidates for the Smith's Prizes and Rayleigh Prizes are of distinction: H. M. Cundy (Trinity College), "Motion in a Tetrahedral Field"; E. R. Love (Trinity College), "Riemann-Stieltjes Integrals"; H. R. Pitt (Peterhouse), "Tauberian Theorems". The Smith's Prizes have been awarded to E. R. Love and H. R. Pitt and a Rayleigh Prize to H. M. Cundy.

GLASGOW.—Prof. G. G. Henderson, regius professor of chemistry, has sent in his resignation, to take effect from October 1.

Dr. J. Bassil Rennie has been appointed whole-time lecturer in the practice of medicine.

SOUTHAMPTON.—Dr. N. K. Adam, research chemist in Imperial Chemical Industries, Ltd., has been appointed professor of chemistry in University College.

Science News a Century Ago

Birds of Paradise of the Arru Islands

At a meeting of the Royal Geographical Society held on March 13, 1837, a communication by W. S. Earl was read entitled "On the Key and Arru Islands". The Arru Islands, the author said, were about forty miles south-west of Papua, or New Guinea, and about a hundred miles to the north-east of Timor Laut. The Keys were a smaller group about thirty miles to the westward of the Arrus. The islands were small but closely grouped. Much commercial intercourse prevailed between the islands and the neighbouring coasts, the chief exports being tortoise-shell, bees-wax, ambergris, edible birds' nests and birds of paradise. The last were found in great numbers on the Arrus and the coasts of New Guinea. They were especially valuable, and from the numbers sent to Singapore appeared to be inexhaustible.

Valentyn, a Dutchman who wrote on the East in 1702, described seven varieties of these beautiful birds, while Le Vaillant, and later Guimard, gave descriptions of them. They were exported in great numbers to Arabia and Persia. Francois Valentyn or Valentijn, who was born in 1666 and died about 1725, was a protestant minister at Amboina, Banda and other places.

The Zoological Society

VARIOUS papers were read at the meeting of the Zoological Society held on March 14, 1837, one of them being by Darwin on the *Rhea Americana* and the newly discovered species, in which he described its mode of swimming, a fact unnoticed by earlier writers, but which he had witnessed in two instances. Their progress through the water was slow, very little of the body appearing above the surface, the necks being extended slightly forward. According to the Guachos, the males carried out incubation and not only hatched the eggs, but also attended the young until they were able to provide for themselves. Several females laid in one nest and the number of eggs deposited by each female during the season was from forty to fifty, or according to Azara, from sixty to seventy.

Physical Science in the University of Edinburgh

No one did more to further the study of physics in Scotland a century ago than J. D. Forbes, who instituted a complete working system of examining for degrees in arts in the University of Edinburgh by means of printed papers. His letters frequently contained references to his efforts to stimulate an interest in natural philosophy, and writing on March 15, 1837, to Airy, he said:

"I have been exceedingly busy, and not very well, which have been the causes of my silence. Among other occupations I have had to read five essays, which I have received in competition for a medal I proposed on the Undulatory Theory of Light, a new subject in Scotland, which I am delighted to find has stirred up our youth, and I have got some really respectable compositions. This is a proof to me that things are mending, and that exertion, private and personal, is not thrown away, even where public sympathy or support is not to be looked for.

"I have not abandoned my polarized heat, but have been much driven about this winter. I have got twelve thermometers sunk in different soils from three to twenty-six feet deep, to measure conduction."

Anniversary Meeting of the Statistical Society

At the anniversary meeting of the Statistical Society held on March 15, 1937, the third annual report of the Council was read. In the report, suggestions were put forth for furthering the object of the Society, which was instituted "for the purpose of procuring, arranging and publishing facts calculated to illustrate the conditions and prospects of society". Reference was also made to the advancement of statistical studies. A Statistical Society had been established at Bristol, and the Statistical Society of Glasgow had commenced to publish its proceedings. In foreign countries the collections of statistics had advanced rapidly. The French Government, following the example of that in Great Britain, had published a volume of statistical tables; the Belgian Government had published a similar volume and a statistical journal had been founded in Sicily. The total membership of the Statistical Society at this time was 392.

Societies and Academies

Dublin

Royal Dublin Society, January 25.

PAUL A. MURPHY: A ten-year experiment on the spread of leaf-roll in the field. The extent of spread was determined in relation to weather conditions in a uniform experiment. Most infection took place in June. Wet Junes were always marked by least spread, due to direct repression of aphids. The reverse did not always hold, the effect of dry Junes being more complex, affecting differently aphids, parasites and plants. Most spread generally took place when the rainfall of the month was nearly normal.

K. C. DIXON: Some aspects of carbohydrate metabolism.

Paris

Academy of Sciences, February 8 (*C.R.*, 204, 385-456)

ALEXANDRE GUILLIERMOND, FERNAND OBATON and ROGER GAUTHERET: Presentation of a film on the mitochondria in plant cells. This film, which is believed to be first taken of plant cells, proves definitely a certain number of essential properties of mitochondria concerning which many cytologists have held different views.

ANTONIN GOSSET and IVAN BERTRAND: The treatment in man of peripheral nerve sections by medullary heteroplastic grafting. Details of three successful applications of the method.

MARC KRASNER and M^{lle}. BRITT RANULAC: A property of polynomials of the division of the circle.

JACQUES HADAMARD: Remarks on the preceding communication. A. Lienard and Khintchine have given independent solutions of the same problem.

SZOLEM MANDELBRÖJT: The principle of regularization of functions.

GEORGES VALIRON: The curves of constant modulus of integral functions.

CHI-TAI CHUANG: Some theorems of the directions of Julia and of Borel of meromorphic functions.

PIERRE DIVE: A heterogeneous fluid mass in rotation with a given kinetic moment.

L. CAGNIARD: The propagation of movement in viscous media.

RENÉ SWYNGEDAUF: A new theoretical expression concerning a pulley with a thick belt.

DAVID BELORIZKY: Resolution of the nebular lines in the spectrum of Nova Herculis 1934.

THÉODORE KAHAN: The theory of the deuteron: proton-neutron interaction of exponential tendency.

ERNEST BAUMGARDT: The absorption of ultrasound waves by benzene.

RENÉ LUCAS: New properties of the thermal elastic waves of liquids.

DOUCHAN AVSEC and MICHEL LUNTZ: Electroconvective vortices in a liquid sheet.

M^{lle}. MARGUERITE QUINTIN: The potential of copper in solutions of copper benzenesulphonate.

LÉON and EUGÈNE BLOCH: Structure of the spectra Sb VI and Te VII.

LÉON GRILLET: The enlargement of the green line (5461 Å. Hg) in mercury vapour arcs under high pressure. The green mercury line has been taken as the most useful basis for many measurements. The radiation of two mercury lamps has been studied with a prism spectrograph and with a grating. It is shown that the definition of the wave-length of this line requires special precautions.

M^{lle}. HOANG THI NGA: The colouring matters of the anthracene group and their photo-sensible capacity.

RENÉ AUDUBERT and HENRI MURAOUR: The emission of ultra-violet radiation in the course of the slow decomposition of nitrides (hydrozoates). The slow decomposition of nitrides when heated is accompanied by an emission of ultra-violet radiation. It is relatively intense with the nitrides of sodium, potassium, lead and silver, but very slight with the calcium and barium salts.

PIERRE BONNEMAN: Contribution to the study of the condensed phosphoric acids.

VICTOR AUGER and M^{lle}. NINA IVANOFF: The study of some phosphates of the type $M_{II}(NH_4)PO_4$.

HENRI MOUREU and GEORGES WÉTROFF: The phospham of Rose. It is concluded that phospham is not produced in the reaction between ammonia and phosphorus trichloride.

LOUIS ROYER: The relations which exist between the gneiss, granitic and rhyolitic rocks of Djebel Arous to the north of Ménerville (Algeria).

ANDRÉ RIVIÈRE: The rational interpretation of the sifting 'spectra' of sandy sediments and the geological signification of the diagrams.

JACQUES BARDET, ARAKEL TCHAKIRIAN and M^{lle}. RAYMONDE LAGRANGE: The determination of lithium in sea-water. Description of the methods employed for concentrating the lithium from 200 litres of sea-water: the purity of the lithium chloride separated was verified spectroscopically. The quantity found was 0.17 mgm. of lithium per litre.

PAUL DE GRAEVE: The evolution of puric nitrogen in the course of germination.

ROBERT BRUNET and ANTOINE JULLIEN: The principal elements of myocardiac architecture in the Lamellibranchs.

RAOUL LECOQ and ROGER DUFFAU: The influence of acute lack of food balance of glucidic origin on the composition of the muscle of the pigeon.

P. G. CHARPENTIER, MAURICE DOLADILHE and CHARLES MOREL: The antibody property of the viscous protein of hæmolytic sera.

W. KOPACZEWSKI: Gel formation of the blood constituents.