

Contemporary Birthdays.

- July 16, 1872. Capt. Roald Amundsen.
 July 18, 1853. Prof. H. A. Lorentz, For. Mem. R.S.
 July 21, 1873. Sir Walter Morley Fletcher, K.B.E.,
 F.R.S.
 July 21, 1873. Prof. Howard T. Barnes, F.R.S.
 July 22, 1865. Sir Richard Redmayne, K.C.B.
 July 24, 1856. M. Charles Émile Picard, For.
 Mem. R.S.
 July 24, 1853. M. Henri A. Deslandres, For.
 Mem. R.S.
 July 25, 1854. Mr. Alfred Barnard Basset, F.R.S.

Prof. LORENTZ, an alumnus of the University of Leyden, was born at Arnheim. He was elected to the chair of theoretical physics in that University in 1875, and among his former pupils was Prof. Zeeman. The Nobel prize in physics was allotted to both of them in 1902. Rumford medallist of the Royal Society in 1908, Prof. Lorentz was awarded the Copley medal in 1918. While his researches as a mathematical physicist of the first order have covered many fields of investigation, his principal work has dealt with the theory of electrons and the constitution of matter considered as an electrodynamic problem.

Sir WALTER FLETCHER, who was born at Liverpool, is a graduate of Trinity College, Cambridge. He is Secretary of the Medical Research Council.

Prof. HOWARD T. BARNES was born at Woburn, Mass., and educated at Montreal Academy and McGill University. Originally a demonstrator in the chemistry department of McGill, he became in 1908 Macdonald professor of physics there, and, soon after, director of the Physics Building. For long he was ice engineer of the Hydro-Electrical Power Commission of Ontario. Prof. Barnes invented the micro-thermometer ice preventive method. He has written many memoirs concerning ice formation, specific heats, and radioactivity.

Sir RICHARD REDMAYNE, consulting mining engineer, was born at Gateshead-upon-Tyne. Following private tuition he attended Durham College of Science, and afterwards he became a mining apprentice at Hetton Collieries. Sir Richard was H.M. Chief Inspector of Mines, 1908–20. A member of many Royal Commissions on mining operations, he has been responsible in the main for the respective official reports. Sir Richard is a chevalier of the Legion of Honour.

M. PICARD, eminent as a mathematician, was born in Paris and educated there at the École Normale Supérieure. From 1879 until 1881 he held a professorial chair in the University of Toulouse. One of the permanent secretaries of the Paris Academy of Sciences, he is a commander of the Legion of Honour. M. Picard is an honorary member of the Royal Society of Edinburgh.

M. DESLANDRES, the distinguished director of the Astronomical and Physical Observatory at Meudon, was born in Paris and educated at the École Polytechnique. An active member of the International Astronomical Union, M. Deslandres is an officer of the Legion of Honour. He has many written memoirs on general and physical astronomy.

Mr. BASSET, a Londoner, graduated at Trinity College, Cambridge, as 13th wrangler. He is the author of a treatise on physical optics, and other works.

NO. 2959, VOL. 118]

Societies and Academies.

LONDON.

Mineralogical Society, June 15.—S. I. Tomkeieff: On some chloritic minerals associated with the basaltic Carboniferous rocks of Derbyshire. Certain lepto-chlorites occurring as vesicular infillings in the Carboniferous lavas ('toadstones') of the North Derbyshire area are described. The chemical analysis of a finely spherulitic chlorite from Calton Hill places it definitely in the delessite-diabantite series. Some other chlorites from Miller's Dale are less crystalline and show a peculiar development of bacteria-like aggregates, similar to those observed in the chlorophæite of Dalmahoy Hill, near Edinburgh. All these chlorites can be compared with the chloritic palagonite occurring in the mesostasis of the non-vesicular basalt of the same lava flow, and it is suggested that both varieties of chlorite are primary, and were formed during the final stages of the solidification of the magma (autopneumatolitic).—F. L. Stillwell: On the nature of berthierite. A chemical analysis of berthierite from Nullamanna, near Inverell, New South Wales, gave the formula $3\text{FeS} \cdot 4\text{Sb}_2\text{S}_3$. Microscopical examination of polished and etched sections of the material shows an intergrowth of about 18 per cent. of stibnite. Deducting this from the results of the chemical analysis, the formula of berthierite becomes $\text{FeS} \cdot \text{Sb}_2\text{S}_3$.—L. J. Spencer: A sperrylite crystal from the Transvaal. Crystals of sperrylite (the rare platinum arsenide, PtAs_2) up to half-an inch across have recently been found in the Potgietersrust platinum fields, Transvaal. The crystal examined measures 5.0-5.5 mm. across and weighs 1.294 gm. It is a brilliant cubo-octahedron developed on all sides and with the corners and edges much rounded. The rounded areas give a profusion of scattered reflected images, few of which lie in the principal zones on the crystal. The only forms identified with certainty are (100), (111), (110), (210), (211).—H. E. Buckley: The anomalous optical properties of some new series of isomorphous double tartrates. In addition to the mixed crystals $\{m \text{NaK}, n \text{Na}(\text{NH}_4)\} \text{C}_4\text{H}_4\text{O}_6 \cdot 4\text{H}_2\text{O}$, previously examined, optical anomalies of the same kind have now been determined for the series $\{m \text{KNa}, n \text{K}(\text{NH}_4)\} \text{C}_4\text{H}_4\text{O}_6 \cdot 4\text{H}_2\text{O}$ and $\{m (\text{NH}_4)\text{Na}, n (\text{NH}_4)\text{K}\} \text{C}_4\text{H}_4\text{O}_6 \cdot 4\text{H}_2\text{O}$. All these crystals are orthorhombic and isomorphous, but when freshly prepared they show crossed dispersion characteristic of monoclinic crystals (borax type). On standing, the crystals show a slow change in the size of the optic axial angles and in the position of the optic axial planes for different colours; and finally, after a lapse of some time, they settle down with all the optic axial planes lying in the plane (100) or (010) or in both, giving in the latter case crossed axial-plane dispersion of the orthorhombic (brookite) type. This change is hastened by rise in temperature and retarded by pressure. Sections from the outer and inner portions of the crystals showed a difference, evidently due to the time taken for growth; but in the final state they are identical, suggesting that the crystals are homogeneous. Other isomorphous series of mixed crystals containing only two of the three bases, namely $\{m \text{Na}_2, n \text{Na}(\text{NH}_4)\}$, $\{m (\text{NH}_4)_2, n (\text{NH}_4)\text{Na}\}$, $\{m \text{Na}_2, n \text{NaK}\}$, and $\{m \text{K}_2, n \text{KNa}\}$, showed, in the range of the visible spectrum, the optic axial planes all in one plane, but with wide differences in optic axial angle.—G. T. Prior: On the South African meteorites, Vaalbult, Witklip, and Queen's Mercy. The Vaalbult meteoric iron is a very deeply and broadly pitted mass weighing about

26 lb. which was found on a farm in the Prieska Division, Cape Province. It is a coarse octahedrite having a percentage of nickel of about 7. The Witklip meteoric stone fell on May 26, 1918, at about 9.40 A.M., after the appearance of a luminous meteor and loud explosions, on the farm Witklip in the Carolina District, Transvaal. Fragments weighing together only about 22 gm. appear to have been preserved. It is a grey chondrite closely resembling the Cronstad meteoric stone. Of the Queen's Mercy meteorite a large stone, a foot and a half long, fell, on April 30, 1925, at Queen's Mercy, about twenty miles from Matatiele, and was broken into small pieces by the natives. A second complete smaller stone, weighing about 950 gm., which fell about fifteen miles from Matatiele, was obtained from Chief Jeremiah Moshesh and is now in the Natal Museum at Pietermaritzburg. The meteorite is a veined grey bronzite-chondrite containing about 15.5 per cent. of nickel-iron, in which the ratio of iron to nickel is about 10.5, and about 5.5 per cent. troilite, and having a ratio of magnesia to ferrous oxide in the pyroxene of about 5.

Royal Meteorological Society, June 16.—J. E. Clark, I. D. Margary and R. Marshall: Report on the phenological observations in the British Isles, 1925. This year illustrated strikingly how easily extreme conditions may cancel out each other if the year is taken as a whole. December 1924 and November 1925 stand out, one as the mildest for many years, the other among the coldest. May gave extremes of warmth and cold and was very wet. June drought and heat were extreme. Yet the year was exactly normal in temperature, and so too the mean date of flowering. Migrants were only a day late. The tree fruit was doubly hit. Early blooming after the warm winter exposed it to the inclemency of late April and May, while the June drought was fatal to young fruit set badly, and also to later-sown crops. Hay, early sown grain, roots including potatoes, did pretty well where weather permitted fair harvesting, but sunshine after mid-July was lacking. Normal plant progress was uneven in various districts, lines of equal unseasonableness showing some districts very early, others as much late. The spread over the British Isles of the cuckoo compared to the swallow shows that passing westward to Ireland from S.E. England its lag behind increases from two to ten days. But northwards to Berwick it loses only three days and then begins to catch up, finally reaching north Scotland a day early on the average of thirty-five years. Twelve organisations are now collaborating in Europe, extending north to Scandinavia, south to Italy, and east to Russia.—S. Morris Bower: Report on winter thunderstorms in the British Islands, Jan. 1 to Mar. 31, 1925. February was the stormiest month in England and Wales, while January was most disturbed in Scotland and Ireland. For England and Wales the stormiest areas were mainly on or near the south coast, the southern parts of Sussex and Surrey being heavily visited.—Edward Kidson: Abnormal rates of ascent of pilot balloons in the lower levels of the atmosphere at Melbourne. Observations extending from 1922 until 1925 are discussed, and tables given showing respectively (1) rapid ascending currents in the atmosphere, and (2) low rates of ascent. Rapid ascending currents and low rates of ascent most frequently occur in the months of September to February inclusive, that is, in the months when the land is warmer than the air and sea. The rapid ascending currents are encountered with the greatest relative frequency at 11.00 hr. and the least at 9.30 hr. With the low rates of ascent the greatest

and least relative frequencies are at the same hours. The low rates of ascent seem to be largely the product of turbulence, the balloon being caught in the ascending portions of eddy currents.

Royal Anthropological Institute, June 22.—V. Gordon Childe: The first colonisation of Central Europe. The first food-producing civilisation was introduced into Belgium and northern France through the gradual spread of Danubian cultivators. These may be traced back to Moravia, and it is clear that in their migration they lost elements of culture. The origin of their civilisation must be sought farther south, immediately in 'Hungary,' though not on the Danube-Tisza plain, which in the warm, wet, early neolithic period would have been uninhabitable. On the loess terraces of Serbia and the Banat a rich civilisation has been discovered from which the Moravian might be derived by degradation. The sites are located where open ridges of loess are cut by the Danube or the Tisza, just where people coming up the Danube would be likely to halt, and often in the vicinity of ores or on auriferous streams. The remains, notably remarkable clay statuettes, and the costume these illustrate, suggest that their makers came up the river bringing with them elements of Ægean and Egyptian civilisation. In the formation of Danubian civilisation, survivals of palæolithic elements and influences from the vase-painters of Transylvania can be detected, and its spread may ultimately have been accelerated by the pressure of nomadic steppe-folk from south Russia.

PARIS.

Academy of Sciences, June 7.—L. Lecornu: The problem of the grindstone.—Léon Guillet: The tempering of lead-antimony, lead-tin, and lead-antimony-tin alloys. Referring to the recent work of Dean, Zicheick and Nix on the tempering properties of white-metal alloys, the author directs attention to earlier work by Dubosc and by himself on the same subject.—Léon Guillet: The cementation of copper, nickel and their alloys by tin. The cementation was produced by heating with a bronze powder (tin 25 per cent.), and results are given for copper, nickel and some alloys. The thickness of the cementation layer varied considerably, 1 mm. being the maximum. The object of the work was to produce a surface with low friction with the minimum proportion of tin.—Victor Grignard was elected a non-resident member in succession to the late W. Kilian.—Michel Petrovitch: A remarkable property of a series of double integrals.—A. Véronnet: Extension of the vectorial calculus to analysis and to the absolute differential calculus.—Noaillon: The determination without ambiguity of the solution of the problem of Dirichlet for functions capable of summation.—Mlle. N. Bary and D. Menchoff: The integral of Lebesgue-Stieltjes and absolutely continuous functions of absolutely continuous functions.—Henry Bénard: The frequency laws of detached alternating vortices behind an obstacle.—P. Dumanois: The possibility of realising high compressions without antideionants. By a modification of the shape of the piston of an internal combustion engine it has proved possible to obtain the same results as were obtained by the introduction of lead tetraethyl into the petrol. The comparisons were made in a car on the road.—Th. de Donder: The application of relativity to atomic and molecular systems.—R. Chambaud: A particular class of solutions of the problem of the circular ring. Application to the theory of thick circular arches.—M. Samsoen: The expansion of commercial glasses. Seventeen kinds

of glass were prepared, cast into rods, and the coefficients of expansion measured with the Chevenard differential dilatometer. The complexity of the problem prevents any theoretical conclusions being safely drawn from the data obtained. It was found, however, that the additive rule of Winkelmann and Schott is not valid.—Salomon Rosenblum: α -rays with single charge.—Chevenard: The course of the isotherms representing the resistance and thermo-electric power of the reversible ferro-nickels in the interval -200° C. to 1000° C. The experimental results, shown in diagram form, do not clearly indicate the existence of the compound Fe_2Ni , but are not definitely opposed to the possibility of its existence. Further experiments at temperatures between -195° C. and the absolute zero are required.—T. Karantassis: Double decompositions between the halogenides of phosphorus, tin, arsenic, antimony, lead, bismuth, silicon, titanium, zirconium and thorium. From the experiments described the conclusion is drawn that in the trivalent metalloid group the iodide of an element of low atomic weight exchanges its iodine for chlorine or bromine from the halogenide of an element of higher atomic weight.—N. Maxim: The action of the organo-magnesium compounds on some aromatic dialkylamides.—Em. de Martonne: Dryness and the index of aridity.—Jacquet: New radioactive springs in the Puy-de-Dôme.—L. Eblé: Magnetic measurements in the north-east of France.—Aug. Chevalier: The cinchonas of tropical Africa.—Mlle. G. Bonne: The constitution of the gynæceum in the *Chrysobalanæ*.—X. Chahovitch: The energy metabolism in the course of experimental scurvy. Study of the metabolic quotient. It is suggested that the increase in the basic metabolism in experimental scurvy may be due to increased secretions of the suprarenal capsules and of the thyroid gland.—Mme. L. Randoïn and R. Lecoq: The inequality of the proportion of water-soluble vitamins (B) in yeast extracts of different origin. It is generally accepted that yeasts and yeast extracts are substances exceptionally rich in the water soluble vitamins. Experiments on pigeons are described which prove that all yeast extracts have not the same biological value. An extract from beer yeast appeared to contain two factors, one securing the maintenance of the animal, the other essentially curative as regards polyneuritis. On the other hand, an extract of distillery yeast contained only the first factor and, tested biologically, was markedly inferior to the extract of beer yeast.—Claude Fromageot: The oxidation of pyruvic acid with ceric ions. On oxidation of pyruvic acid with ceric salts the solution containing the enol form behaved differently from that containing the keto form, the former taking up more oxygen. The enol form is more rapidly oxidised than the keto form.—Raymond Petit: The action of a solution of basic chloride of quinine and of urethane on the blood.—Henri Marcelet: Studies of the oils extracted from the head of a dolphin (*Delphinus Delphis*). Oils extracted from the maxillary glands, from the nose, and from the fat surrounding the skull were submitted to complete physical and chemical examination. Large differences were observed, showing that earlier analyses of oil described as dolphin head oil must give misleading figures.—H. Barthelemy: The influence of the dilution of the sperm on the duration of survival of the spermatozooids of *Rana fusca* in aqueous or saline media.—Ch. Porcher: The alteration of the micelles of the caseinate in the calcium caseinate-calcium phosphate complex and its consequences in the action of rennet on this complex.—Boulard: A method permitting fermentations to

be arrested at will, especially liquids containing sugar and alcohol, and rendering these unfermentable. The method is based on the fact that a second culture does not develop in a medium which has previously served for the cultivation of the same ferment. The method is capable of industrial applications.—E. Lesné and S. Simon: New observations on the anti-rickets factor of cod-liver oil. Vegetable oils neither prevent nor cure experimental rickets, whereas certain cod-liver oils both prevent and cure. It is shown that whilst certain oils are more or less active, others are absolutely inert, even although the latter fulfil all the requirements of the Codex. It is suggested that these results prove the necessity for a biological test of cod-liver oil.—A. Nanta: A myxobacterial splenomegaly.—P. E. Pinoy: A synbacterium isolated from cases of splenomegaly.

ROME.

Royal National Academy of the Lincei, May 2.—P. Burgatti: Elastic distortions.—U. Cisotti: Dynamic effects of a fluid circulating between any number of thin cylinders with parallel axes.—Ferruccio Zambonini and Luca Coniglio: The presence of marked proportions of caesium compounds in certain products of the present-day activity of Vesuvius.—M. Cantone: Reply to a criticism. Bemporad's criticism of the author's communication on a new method of studying experimental results.—Achille Russo: Absence of agamous period and individual development in *Cryptochilum echini* Maupas.—Luigi Fantappiè: Non-linear analytical functionals.—Francesco Tricomi: Inversion formula of the order of two double integrals "with asterisk."—Vladimiro Bernstein: Singularity of interpolating functions satisfying certain asymptotic conditions.—E. Cartan: Riemann's spaces in which transport by parallelism maintains the curvature.—G. Vranceanu: A class of anolonomous systems.—U. Bordoni: The transmission of heat by radiation.—E. Persico: Magnetic rotatory polarisation in an alternating field. The rotatory polarisation of light in an alternating magnetic field follows the variations in the field almost exactly.—Giorgio Piccardi: The affinity of the neutral bromine atom for the electron.

VIENNA.

Academy of Sciences, May 20.—F. Schuster: On vapour pressure curves.—A. Wegener: Observations of the twilight arch and of the zodiacal light in Greenland.—Z. Dische and D. Lazlo: The influence of carcinoma on the glycolysis of organs, especially liver and kidney.—F. Heritsch: The "window" of Fischbach, a vault of Semmering rocks, limestone and quartzite under the massive gneiss.—H. Handel-Mazzetti: New Chinese plants (fortieth and last communication), including 12 species of *Gentiana*.

Official Publications Received.

Conseil Permanent International pour l'Exploration de la Mer. Rapports et Procès-verbaux des Réunions, Vol. 39: Report of the North-Western Area Committee for 1924 and 1925 (Rapport Atlantique, Secteur Nord-Ouest, 1924-1925). By Prof. Johs. Schmidt. Pp. 168. Publications de Circonstance, No. 91: On a New Repeating Current-Meter. By V. Walfrid Ekman. Pp. 27. (Copenhagen: Andr. Fred. Høst et fils.)

Transactions of the Royal Society of Edinburgh. Vol. 54, Part 3, No. 11: The Anatomy of the Head of a Fœtal African Elephant, *Elephas africanus* (Loxodonta africana). By Dr. Nellie B. Eales. Pp. 491-551+12 plates. 12s. Vol. 54, Part 3, No. 12: The Old Red Sandstone of Shetland. Part 1: South-Eastern Area. By Dr. T. M. Finlay; with an Account of the Fossil Fishes of the Old Red Sandstone of the Shetland Islands, by Sir Arthur Smith Woodward and Errol Ivor White. Pp. 553-572+3 plates. 3s. 6d. (Edinburgh: Robert Grant and Son; London: Williams and Norgate, Ltd.)