

Lord Abercromby was a fellow of the Royal Society of Edinburgh and an hon. LL.D. of the University of Edinburgh. He was a vice-president of the Folklore Society and formerly president of the Society of Antiquaries of Scotland. In 1921 he presided over Section H (Anthropology) of the British Association at the Edinburgh meeting, and when, in the following year, a local branch of the Royal Anthropological Institute was formed at Edinburgh, he was unanimously elected the first president. His tact and charm of manner, his never-failing courtesy to all, and his assiduous attention to the duties of the offices he held, notwithstanding failing health, won the affection and respect of all with whom he came into contact. As Lord Abercromby leaves no heirs male, the title now becomes extinct.

THE death is announced on August 4 last of Dr. Santiago Roth, head of the department of palæontology in the Museum of La Plata, Argentina. Dr. Roth was born in Switzerland and emigrated to Argentina nearly half a century ago, where he became especially skilled in collecting fossil skeletons of mammals from the pampas. He sold many fine specimens to the museums of Zurich and Geneva, and some also to the

Zoological Museum of Copenhagen. When the Museum of La Plata was founded, he was employed by the late Dr. F. P. Moreno to collect similar pampean skeletons for that institution, and he was soon appointed to take charge of the fossils. Dr. Roth added much to our knowledge of the pampean formations, which he studied extensively and in great detail, and he also described many of the mammalian remains.

WE regret to announce the following deaths:

Dr. Edouard G. Deville, I.S.O., Director-General of Surveys in the Canadian Department of the Interior, and author of "Astronomic and Geodetic Calculations" and "Photographic Surveying," on September 21, aged seventy-three.

Dr. E. O. Hovey, curator of the Department of Geology and Invertebrate Paleontology of the American Museum of Natural History, on September 27, from a stroke received in his office on the preceding day, aged sixty-two.

Dr. C. W. Moulton, professor of chemistry since 1894 at Vassar College, New York, on September 13, aged sixty-five.

Dr. J. M. Schaeberle, formerly at the Lick Observatory, and author of a number of papers on astronomical subjects, aged seventy-one.

### Current Topics and Events

THE Everest Expedition of 1924 reported to a joint meeting of the Royal Geographical Society and the Alpine Club before a distinguished assembly in the Albert Hall on October 17. Earlier in the day a memorial service for Mallory and Irvine was held in St. Paul's Cathedral. Pioneers like Drake and Livingstone, these two perished, as did Scott and Shackleton, in an attempt to go one step beyond the bounds hitherto set to human endeavour, and their names in their simplest form will be treasured in the national memory. Both were Cheshire men, and the Bishop of Chester embodied the spirit of the impressive service under the famous Cathedral dome in an address which showed how the two mountaineers, now at rest in the most magnificent cenotaph in the world, were great climbers because they were great men full of courage, unselfishness and cheerfulness, men who had attained to great spiritual heights, men who had risked life itself in the service of others. Odell, who was in support, was climbing to Camp VI. on June 8 by a circuitous route. He discovered fossils in a band of limestone, and found himself enveloped in mist with clear sky above. By a mere chance he climbed a crag and emerged into a sudden temporary clearing of the mist to a vision of the summit ridge and peak of Everest. Far away on a snow slope near the base of the final pyramid he saw two figures climbing slowly towards their goal, one reaching out to help the other, then the mist fell again. The time was 12.50, and Mallory and Irvine were three hours late on their time schedule, yet they were pressing on. The chances are that they were speeding to the accomplishment of the little bit more which meant so much. Odell believes

they got to the summit and were benighted on the return journey. *Sic itur ad astra*. The sure record stands that Mallory and Irvine climbed to 28,230 feet with the help of oxygen. On another attempt, Norton and Somervell reached 28,130 feet without oxygen, and this presages a future success by a similar effort which will probably be made in 1926. Other records were Odell's three ascents between 25,000 and 27,000 feet within a week, the carriage by six porters of loads to a height of 27,000 feet; men have slept well in camp at 26,800 feet. The upper half of Everest consists of slabby altered limestones, a 1000-foot thickness of sandstone and fossils has been found, and in 1924 persistent cold winds blew from the west with night temperatures which fell once to  $-22^{\circ}$  F. At Camp IV., 23,000 feet, twice in June, the noon sun temperature was  $105^{\circ}$  F., while the air temperature was only  $29^{\circ}$  F.

THE broadcasting last week of the speeches of the leading politicians of Great Britain proves that the influence of radio communication on the lives and affairs of men is already very great. Mr. Reith, the manager of the British Broadcasting Company, in an article in the October *Quarterly Review*, gives an account of the present position of the art and indicates some possible future developments. In less than two years the staff has increased from 4 to 350, and operations are now carried out nightly in twenty cities. A system of simultaneous broadcasting has been carried out for more than a year, and practically a million licenses have been issued. There are very few "blind spots," that is, regions which suffer appreciably from shielding, due possibly to hills,

where reception is in consequence difficult. In the nightly audience every grade of society, every standard of intellectual attainment, and every variety of taste are represented. The managers aim at giving satisfaction to three-quarters of the audience, three-quarters of the time. Their aim is both entertainment and instruction, and the educational possibilities are being rapidly developed. By the aid of the master microphone a single man can influence a nation, and through its agency the ideals of universal brotherhood can be broadcast over the whole world. At the present moment, by means of the cheapest crystal set, about 75 per cent. of the total population of Great Britain can listen in. A large fraction of the remaining 25 per cent. will be covered when the high power station thirty miles north of London is opened next year. This station has a guaranteed range of 100 miles for cheap crystal sets, 300 for single-valve sets, and about 1000 for two-valve sets. The Bethnal Green Borough Council recently suggested that they should erect a central aerial to supply the district, and so dispense with the necessity for independent aerials in every house. We think that the suggestion is impracticable, while the legality of such a proceeding is open to question; but many of the unsightly and unnecessary aerials hung out by tenants should be prohibited by law. The situation might be improved if radio manufacturers would advertise more largely the fact that in most cases, when electric or gas lighting is used, an aerial is unnecessary even with crystal sets.

SIR ARTHUR EVANS, in the *Times* of October 16 and 17, gives a further account of his work in Crete during the present year. Investigations of the neolithic remains immediately below the Central Court have brought to light three fragments of stone vessels to be related to the early Nilotic lapidary work. They are the first to be found in pure late neolithic floor deposits. Vessels of predynastic form and material had already been found at Knossos, but in unstratified earth. This discovery throws back the actual contact between Crete and Egypt and the closing phase of neolithic culture in the island to the middle of the fourth millennium B.C. The road from Knossos to the south coast has now been traced to a Minoan haven at Como round a headland north of the harbour of Matala. Excavation of the indurated clay at the point where this road abuts on the hillside below Knossos has revealed further details of the construction of the viaduct across the ravine and the entrance system of the palace, as well as the pavilion or caravanserai at the south-eastern extremity of the viaduct. This building of unique character faces north with a frontage of more than 160 feet. The walls of the pavilion, only the lower parts of which are standing, had been covered with frescoes, of which fragments preserved in the petrified ground have been pieced together and reveal a frieze of a novel character of naturalistic red-legged partridges and hoopoes on a highly conventionalised landscape background. The bath chamber adjacent had an elaborate system of conduit pipes. In an

underground "fountain" chamber packed with votive vessels was found a primitive image of a goddess within a vessel shaped like a round hut—the Lady of the Source herself.

THE work of Prof. A. Maihle, of the University of Toulouse, on the catalytic effect of various contact materials on a great variety of materials, is well known to the organic chemist, but recent developments, from the point of view of the supply of fuel for internal combustion engines, have attracted considerable attention amongst fuel technologists. At a recent congress held in Paris, Maihle described his work on the pyrogenesis of fatty oils and showed how a copper-aluminium catalyst brought about the rearrangement of linseed oil into a synthetic petroleum. The fatty acid from arachin oil brought into contact with tested magnesium chloride yielded 68 per cent. of a "mineral" oil which contained motor spirit, burning oil, and more viscous components. A similar product was obtainable from chlorophyll, and it appears possible that even cellulose would be capable of yielding hydrocarbons. At the same time, it should be mentioned that the commercial possibilities of this work are probably highly over-estimated. Up to the present date, less than one cubic mile of petroleum has been extracted from the earth's crust, and the world is faced to-day with over-production rather than with a deficit of mineral oil. Even when the known resources of petroleum are exhausted, there are untold volumes of potential liquid fuel derivable from shale, whilst the work of Bergius indicates that even when shales are exhausted, every coalfield is a nascent oil reservoir. In these circumstances it is difficult to see that the production of oil from vegetable sources is other than of scientific interest.

A SERIES of short instructions on the method of taking and reporting readings of temperature and rainfall has been issued by the Meteorological Office, Air Ministry. The pamphlet bears the title of "The Observer's Primer" and was primarily prepared for meteorological observers in British Crown Colonies. The instructions, if carefully considered by observers of the weather, will render the observations made of much greater value. Uniformity of system in observing is of primary importance, and careful readings of temperature and rainfall are of infinitely more value than minuteness in the fineness of reading. Instructions are given as to the exposure of thermometers and the position of the rain-gauge. The hints are essentially of value to new observers, and if followed will place the observer on the same footing as one who has already had experience.

MONTHLY normals of rainfall for the British Isles for periods ending 1915 have recently been published as Section V. of "The Book of Normals" by the Meteorological Office of the Air Ministry. The material has been prepared by the British Rainfall Organisation, which, since 1919, has been incorporated in the Meteorological Office. Monthly and annual values are given for 578 widely distributed places, compiled from the records for the 35 years

1881 to 1915. This period is chosen chiefly because it probably gives the largest number of synchronous and homogeneous records. Section V. covers the same ground as Section I., but it comprises many more stations; the additional information now available has been utilised for the present issue and where necessary corrections have been made. The arrangement of the stations is the same as that adopted in "British Rainfall" and differs from that of previous sections of "The Book of Normals." It is now easy for any inquirer to compare the very different amounts of rain which occur in different places. The modifications made in Section V. are fairly numerous, as is clearly seen from a careful examination. It is of general interest to see how on the same coast the average rainfall differs; at Eastbourne the total for the year is more than 3 inches heavier than at Worthing, and an excess is maintained in every month of the year. The mean for the 35 years at Greenwich Observatory is about 1 inch less than the mean for 100 years terminating at the same date; for the 35 years the mean for September is 0.47 inch less than December, while for the 100 years, September is wetter than December.

Two hundred years ago this month, the firm now known as Longmans, Green and Co., publishers, was founded by Thomas Longman, an ancestor of some of the present directors, and we are sure that our readers everywhere will join us in offering our congratulations on the completion of so long a period of public service. Thomas Longman was apprenticed to a bookseller in Lombard Street in 1716, and when his indentures ran out in 1724, he acquired the business of a publisher and bookseller in Paternoster Row at the sign of the Ship in Full Sail. That site marks the birthplace of the house of Longman, and it is interesting to note that, with the exception of a short period, 1861-63, when a fire made rebuilding necessary, a publishing business in the name of Longman has occupied the site continuously for two centuries, while the old sign has been adopted as the firm's trademark. From the date of its foundation onward, at least one Longman has been in the firm, and now the sixth generation is in possession. It is a fine example of the inheritance and development of traditions which have led to an important and ever-increasing business. Among the works issued by Longmans with which scientific workers will be familiar are Salmon's "Conic Sections," Herbert Spencer's "Principles of Psychology," Herschel's "Outlines of Astronomy," Webb's "Celestial Objects," and Gray's "Anatomy," which was published in 1858 and achieved its twenty-second edition last year. Then in the 'sixties came Tyndall's Lectures, while of more modern works we may quote Watt's "Dictionary of Chemistry," Sir Edward Thorpe's "Dictionary of Applied Chemistry," Mellor's "Inorganic and Organic Chemistry," which is now in course of publication, J. G. Millais' sumptuous volumes on British ducks and on rhododendrons, and Thorburn's equally beautiful works on British birds and mammals. The firm and its directors have a record of which they may well be proud, and we wish them long and continued prosperity.

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THE seventh annual Streatfeild Memorial Lecture will be delivered at 4 o'clock on Thursday, November 6, at the Finsbury Technical College, Leonard Street, E.C.2, by Mr. Julian L. Baker, who will speak on "The Chemist and the Fermentation Industries."

THE Thomas Hawksley lecture of the Institution of Mechanical Engineers will be delivered at the institution at 6 o'clock on Friday, November 7, by Vice-Admiral Sir George G. Goodwin. The subject will be "The Trend of Development of Marine Propelling Machinery."

THE British Association for the Woollen and Worsted Industries is inviting applications from persons who have engaged in original research for the post of physicist. Applications stating academic qualifications, research work, and technical or engineering experience, if any, should be sent to the Secretary of the Association, Torridon, Headingley, Leeds.

APPLICATIONS are invited from holders of a university honours degree in science or engineering, or equivalent, with experience in engineering works, for a research assistantship at the Royal Aircraft establishment, South Farnborough, Hants, for work in connexion with aero engines. The applications, quoting reference No. 37, should be sent to the superintendent of the establishment.

THE Dorset Field Club announces that the Cecil Medal and Prize of 10*l.* will be awarded in May next for the best essay on "Broadcasting: its Possibilities and Limitations." The competition is open to persons between the ages of seventeen and thirty-five, born in Dorset or resident in that county for not less than a year between May 1, 1923 and 1925. Particulars of the competition are obtainable from Mr. H. Pouncy, Midland Bank Chambers, Dorchester.

A REPRESENTATIVE assembly was present at the memorial service for the late Sir William Herdman at the ancient chapel of Toxteth in Liverpool, on Thursday, October 16. The Mayoors of Liverpool and Birkenhead, representatives of the University, the various civic bodies, the Royal Society, the British Association, the Marine Biological Association, the Liverpool School of Tropical Medicine, the Society of Chemical Industry, and other institutions attended. The Unitarian service was conducted by the Rev. C. M. Wright, the minister of the chapel.

IN addition to the development of commercial transport by rigid airship, the directors of civil aviation in the United States of America have a programme of semi-rigid airship construction and operation. The latter have the advantage of smaller size, first cost and running expenses, but have less speed, range and carrying capacity, and less ability to ride out a spell of bad weather. Available data are so untrustworthy that it is better to await the completion of the programme rather than to offer anticipations which can be little better than guesses.

THE following committee has been appointed by the Board of Trade to consider and report on the steps which can be taken to bring about the growing

of flax seed and flax in the British Isles on a commercial scale:—Sir Frank Warner (chairman), Mr. W. Norman Boase, Mr. J. G. Crawford, Sir A. Daniel Hall, Mr. A. L. Hetherington, Sir Thomas H. Middleton, and Mr. H. Mead Taylor, together with a representative, to be appointed later, of the Ministry of Commerce of Northern Ireland. The Secretary to the Committee, to whom all communications should be addressed, is Capt. S. E. J. Brady, Board of Trade, Great George Street, London, S.W.1.

THE Council of the Institution of Automobile Engineers has made the following awards for papers read during the past session:—Crompton Medal to Dr. Aitchison for his paper entitled "Light Alloys for Pistons and Connecting-Rods," and Utility Prize, given by Col. D. J. Smith for the paper of greatest utility to the automobile industry, also to Dr. Aitchison for the same paper; Graduates Prize to Mr. R. N. Aveline (Coventry Branch) for his paper entitled "Carburation."

IN the Report on the Raffles Museum, Singapore, for 1923, Mr. C. Boden Kloss, who has succeeded Major J. C. Moulton as director, announces that sanction has been given for a new wing on the site kept vacant for this purpose between the museum and the sea. The museum is becoming yet more frequently used by local residents who seek information from a scientific or commercial point of view. From near the summit of Gunong Angsi (2700 ft.), in Negri Sembilan, Mr. F. N. Chasen has obtained a specimen of a martin, *Chelidon dasyptus*, the first one recorded from the mainland of the Malay Peninsula.

THE September issue of the Journal of the Franklin Institute gives an account of the presentation on May 21 of the Franklin medals to Sir E. Rutherford and Dr. E. Weston respectively. Unfortunately neither recipient could be present in person, but the former sent an interesting account of the events and ideas that guided him in his early researches in radioactivity, which was read by Dr. J. S. Ames, professor of physics in the Johns Hopkins University. Dr. Weston is well known as the inventor of the standard cell, but it is not generally known that he discovered and patented the resistance alloy now known as manganin, the manufacture of which was taken up in Germany. Dr. Weston was born in England in 1850 and went to America in 1870.

THE Technological Museum of Sydney has so high a reputation in Great Britain that it is disappointing to read in its latest annual report that "it has not received that appreciation of the public such an institution deserves." Since the attendance for the year was 43,138, since visits to the museum form part of the work of the elder scholars in the Secondary and High Schools, and since many manufacturers have generously augmented the industrial exhibits, we infer that the director is alluding only to the inadequacy of the State grant. The annual vote, which had been temporarily suspended, has indeed been restored, but the available money is not enough to meet the needs of the central museum and of the

six country branches. Let us hope that, as the situation improves, the claims of this admirable institution may meet with due recognition.

IN the October number of *Scribner's Magazine* is an article on predicting earthquakes by Prof. T. A. Jaggar of the Hawaiian Volcano Observatory. Though he refers to one or two successful forecasts of volcanic eruptions, the article is rather a plea for the foundation of a geophysical observatory in New York, a plea supported by an account of an imaginary earthquake in that city in 1932. There is no reason, he considers, for regarding New York or Washington as immune from a shock like that of Charleston in 1886. Prof. Jaggar's view is partly due to a table of seismicity which he has compiled for various regions, depending on the number of earthquakes per year for an average square mile without regard to their intensity. In the eighth degree, he places New York and New England with central California and parts of New Zealand and Mexico. But, in the ninth degree, are included the north of England along with Asia Minor, Messina, and the Lesser Antilles; and, in the tenth and highest degree, Perthshire beside Manila, Guatemala, and Tokyo.

AT the opening meeting for the 1924-25 session of the Institution of Petroleum Technologists, held on October 7, awards of the Institution's medals and scholarships were announced. The Boverton Redwood Medal for the sessions 1919-20 and 1920-21 was awarded to M. Paul de Chambrier of Pechelbronn, for his paper on the "Working of Petroleum by means of 'Shafts' and 'Galleries,'" read before the Institution on February 15, 1921. This medal, presented to the Institution by Mr. Alexander Duckham to commemorate the late Sir Boverton Redwood, founder and first president of the Institution, is awarded to the author of the paper of the greatest merit on any subject connected with petroleum technology, presented to the Institution during two consecutive sessions, and is not confined to members of the Institution. The award has been made retrospective to 1919, the date of Sir Boverton Redwood's death. As there was no paper of outstanding merit for the sessions 1921-22 and 1922-23, no award has been made for those sessions. The Student's Medal and Prize has been awarded to Lieut. J. H. Blakiston, R.N.R., formerly student of the oil technology course at the University of Birmingham, for his paper entitled "The Oilfields of Roumania." This award is made to the student member of the Institution who presents the best paper on any subject connected with petroleum technology, in any one session. This is the first award of this medal and prize. A Scholarship has been awarded to Mr. Ernest Clark, of the Royal School of Mines. These scholarships are awarded annually, one each to the Royal School of Mines, Imperial College of Science and Technology, London, and to the University of Birmingham, to a third year student, taking the petroleum technology course, who is also a student member of the Institution.

A LARGE part of the Report of the South African Museum for 1923 is taken up by the late Dr.

Peringuey's complaint of the delay in providing additional buildings. The large whale skeletons that stood so long in the open—to their considerable detriment—have been covered by a T-shaped building of brick with asbestos roof; but for some reason this was not made large enough to include a fin-whale and a male sperm-whale. Counting these, all the cetaceans known to occur along the coast of the Union are represented, except two porpoises. Special mention is made of *Balænoptera rostrata* and *Neobalæna marginata*, which have not long been known to occur in these waters. Owing to the damaged condition of many skeletons, some new ones are required, but so far only one whaling company, and that a foreign one, has befriended the museum. An old iron and wood building was obtained to store some of the other vertebrate skeletons, and, pending the erection of a wing for which 20,000*l.* was voted in 1914, this has also been used for exhibition purposes. One of the wings of the main building has been lent to the Art Gallery, which also waits in vain for the completion of a promised building. Whatever be the cause, it is certainly regrettable that valuable collections should be suffered to decay for lack of halls and cases.

LAST year at about this time we were able to extend a welcome to the *British Journal of Experi-*

*mental Biology*, which was the first periodical in Great Britain designed to cover this important and growing field. Other countries were already served by comparable publications. We now learn that an international journal of general biology, under the title of *Biologia Generalis*, is to be issued shortly under the editorship of Prof. Leopold Löhner, of the University of Graz, Prof. Raymond Pearl, of the Johns Hopkins University, Baltimore, and Prof. Vladislav Ruzička, of the Charles' University, Prague. The list of co-editors, who will presumably form an editing committee, contains the names of biologists from most European countries and also from the United States of America. It is proposed to publish original articles on general morphology, physiology, and ecology, and contributions will be printed in English, French, German, Italian, or Russian. The publishers of the new journal are Messrs. Emil Haim and Co., Vienna 1, Maria Theresienstrasse 10, and Bratislava, C.S.R., or, in the United States, through the Johns Hopkins Press.

MR. H. KIRKE SWANN is publishing, through Messrs. Wheldon and Wesley, Ltd., in 12 parts, a limited edition of "A Monograph of the Birds of Prey (Order Accipitres)." The work will be illustrated in colour by H. Gronvold, and the first part is promised for November 15.

### Our Astronomical Column.

THE ASTRONOMICAL DAY.—In a recent notice in this column of the Brussels *Annuaire*, it was stated, on the authority of the *Annuaire*, that the "Berliner Jahrbuch" for 1925 was not participating in the change of the commencement of the astronomical day from noon to midnight. Examination of next year's issue of the *Jahrbuch* shows that this statement is incorrect; that publication comes into line with all the other national ephemerides, which is a matter of congratulation, as a variety of usage in different countries would be a source of frequent errors. It is not too early to remind astronomers to make the change in any publications relating to next year's work. In a few cases it has been overlooked.

THE STARS OF TYPE O.—An important monograph on these stars by Dr. J. S. Plaskett forms vol. ii., No. 16, of the Publications of the Dominion Astrophysical Observatory. They are the most massive of any type; their mean mass is shown to be some 45 times that of the sun, the probable range being from 10 to 80 times that mass. The mean mass for early B stars (B<sub>0</sub> to B<sub>5</sub>) is 10 times that of the sun.

In spite of the high mass, the O stars have the high average radial velocity (cleared of sun's velocity) of 25.5 km./sec., which is higher than that of any type except the M variables (35 km./sec.). The total space velocity is twice as great.

The close relationship between O stars and planetary nebulae has been indicated before, but is further demonstrated.

The mean parallax of the O stars is difficult to determine, owing to their small proper motions. It is found to be about 0.0011" for 6th magnitude stars, indicating a distance of 3000 light-years and an absolute magnitude of  $-4^{m_{10g}}$ , which agrees with Eddington's mass luminosity relation.

The monograph proceeds to discuss the fixed H, K calcium lines, supposed to indicate cosmic clouds between the earth and the stars, excited by their radiation. The Wolf-Rayet or "Emission O" stars are also discussed. Dr. Plaskett adopts the notation of O<sub>5</sub> to O<sub>9</sub> for the Harvard O<sub>a</sub> to O<sub>e</sub>. He proposes that the suffix *e* should be used to denote the presence of emission lines.

Many of the spectra discussed are reproduced in three plates at the end of the work.

STELLAR DISTRIBUTION.—The researches of Mr. K. G. Malmquist on this subject were recently noted in this column. The question of the relative frequency of the different spectral types, and of the giants and dwarfs of the same type, is of such fundamental importance in stellar cosmogony that it is of interest to give for comparison the figures given by Prof. Harlow Shapley (*Scientific Monthly*, May 1924) for the numbers of stars of different types contained in a cube the side of which is 100 parsecs; they are Giant M 22, Giant K 160, Giant B 4.4, Giant A 250, Dwarf F 680, Dwarf G (solar type) 7600. He notes that Dwarf K and M would far outnumber the last, but exact data are not available. He concludes from the small figure for Giant B that extremely few stars have sufficient mass to attain so high a temperature. It may also indicate that stars do not remain in this stage for long. Stages K and A appear to be much longer.

Prof. Shapley concludes that 95 per cent. of the stars in the Henry Draper Spectral Catalogue are within 1000 parsecs of the sun; this region is only one-millionth of that which he believes from his researches on the clusters to be closely populated with stars. The paper also deals with the galactic concentration of different types. This is great for B, A, slight for F, G, moderate for K, M.