

Current Topics and Events.

WITH this issue appears the first of a series of supplements which it is proposed to publish from time to time dealing descriptively with subjects of wide scientific interest. The present supplement is devoted to a discourse delivered at the Royal Institution on March 2 by Dr. G. C. Simpson, director of the Meteorological Office, and it provides in a convenient form a synopsis of existing knowledge of common meteorological phenomena. The method of dealing with the subject is characteristic of the present-day physicist, and it is essentially interesting. Saturation and relative humidities are somewhat fully described, and this is followed by a discussion of condensation at temperatures above the freezing point. It is of interest to note that the number of nuclei present in the air varies from a minimum of about 100 per c.c. to 100,000 or 150,000 per c.c. at times in cities such as London and Paris. Condensation nuclei are formed in various ways, one being the household fires and factory chimneys which produce large quantities of nucleus-forming material, chiefly sulphurous oxide. In England something like 5000 tons of sulphur are burnt each day in coal fires, giving enough sulphur products to pollute the atmosphere of the whole of Great Britain. Haze and mist, though so much alike in appearance, appear to be fundamentally different, haze owing its origin to foreign matter and a small amount of water, while mist is due to an actual precipitation of water from vapour to liquid. On the other hand, there appears to be no fundamental difference between mist and fog, fog is generally only a dense mist. Above the fog temperature inversion prevents all upward motion of the air and the smoke made by large towns is kept fairly stationary and within a few hundred feet of the ground. Clouds, rain, thunderstorms, hail, snow, and other aspects of weather are so often topics of conversation that Dr. Simpson's authoritative discourse upon them will be welcomed by all scientific readers.

THE nomination of Sir David Bruce as president of the British Association for the meeting in Toronto next year is a well-deserved honour which will be gratifying to the many friends and admirers of this distinguished scientific investigator. Sir David belongs to the Royal Army Medical Corps, and early in his career made a name for himself by cultivating the *Micrococcus melitensis* and establishing its causative relationship to Malta fever by reproducing the disease in monkeys. Later, in 1904, he was the leader of the Royal Society's Malta Fever Commission, which made the important discovery that fifty per cent. of the goats in Malta were infected and ten per cent. of them excreted the micrococcus in their milk. Within a year of prophylactic measures based on this fact being put in force, the cases at Malta fell to one-tenth of the former numbers, and since that time the Navy has been practically rid of one of the main causes of sickness in its personnel. Of still greater interest and importance are Sir David's

patient and well-thought-out researches on the greatest obstacle to the civilisation of tropical Africa, tsetse-fly disease of animals and man. His demonstration of the *Trypanosoma Brucei* as the cause of the fatal tsetse-fly disease of cattle and horses in 1894 paved the way for his demonstration in 1903 that "sleeping sickness is, in short, a human tsetse-fly disease," by a wonderfully well conceived and worked-out experiment carried out as leader of a series of Royal Society Commissions working in Africa over a number of years. The etiology of two of the most important tropical fevers was thus elucidated by his investigations, with widespread results. Sir David is characterised by the thoroughness of his work and the intuition he has always brought to bear on every problem he has tackled. He is very fortunate in his helpmeet, Lady Bruce, who has shared in both the hardships and the scientific work of his many African expeditions.

FIFTY years ago, on April 18, 1873, Justus von Liebig died at Munich at seventy years of age. In 1824, at the early age of twenty-one, he began his career as professor of chemistry at Giessen and he devoted the first twenty years of his academic work to researches in the field of organic chemistry and in developing and perfecting practical laboratory instruction. The results of these labours quickly met with general recognition, and on his first visit to England Liebig was referred to by Faraday, at the meeting of the British Association at Liverpool in 1837, as one of the greatest of living chemists. Great difficulties had to be overcome by Liebig when he began to extend his theoretical and practical work to biological problems. In 1840 he published "Organic Chemistry as applied to Agriculture and Physiology," and in 1842 "Animal Chemistry, or Organic Chemistry as applied to Physiology and Pathology." The doctrines of the nutrition of plants and animals contained in these epoch-making works were at first rejected by chemists, physiologists, and agriculturists, but most of them were established in the course of the following years. Liebig's view that plants build up their organic parts exclusively from the carbon dioxide of the air and the water contained in the atmosphere and the soil, and that in intensive agriculture the mineral substances, especially potash, phosphoric acid salts, and nitrogen compounds, must be supplied to the soil in the form of artificial fertilisers, in addition to natural manure, was first accepted in England. After Liebig had modified his original opinion that the artificial fertilisers must be fairly insoluble in order not to be washed away by the rain, having recognised the extent to which the soil is capable of absorbing these substances, his doctrine of artificial fertilisation was generally accepted and forms the foundation of modern agriculture. In 1864 and 1865 Liebig wrote, at the request of the Lord Mayor of London, important papers on the utilisation of the sewage of London. Other widely-known publications are those on meat extracts,

baking methods, soup for infants, silver mirrors, etc. Liebig gave a popular exposition of his views in his "Familiar Letters on Chemistry," a work from which many students of science have derived interest and inspiration.

THE season's excavations at Ur of the joint expedition of the British Museum and the University of Pennsylvania closed early in March. The chief results were described by Mr. C. Leonard Woolley in a lecture, reported in the *Times* of April 2, which he delivered at Bagdad before leaving for England. The excavations were made in a walled enclosure, resembling a citadel, within the walls of the city, in which the most prominent building was a *ziggurat* of four stories, the tower of the Temple of Nanna, the Moon god, completed about 2250 B.C., and coated with blue glazed bricks by Nabonidus about 550 B.C. One of the most interesting finds was a headless diorite statue of Eannatum, King of Lagash about 2900 B.C., which may have been a trophy of war. From its earliest beginnings, possibly in 3600 B.C., until it was altered by Nebuchadnezzar in about 600 B.C., the plan of the Temple remained unchanged. The find of a golden statue in a small temple at the foot of the tower indicates that this monarch introduced a change in ritual, to which reference is made in the book of Daniel, and brought the god from the seclusion of the sanctuary out into the open to be an object of public worship and veneration.

A QUESTION agitating workers in several branches of science at the present day rather more intensely than usual is the furnishing of an adequate guide to the growing volume of published work. The lapse of the International Catalogue and the great increase in the costs of production have made the situation acute. It has long been recognised that there is a vast amount of overlap and of wasted effort, and that, if only the various societies and publishing bodies would combine, they could provide a better service at less cost. This was the line followed by Dr. J. R. Schramm, of the National Research Council, Washington, in a recent lecture on the indexing of biological literature (*Science*, November 3, 1922). He held up *Chemical Abstracts* as the example to be followed, and considered that the Federation of American Biological Societies, to which we have previously referred, could produce a similar *Biological Abstracts*, equally complete, at an annual expenditure per member of 6 to 8 dollars. Dr. Schramm, it will be seen, believes that abstracts are what the workers want. Prof. Cockerell, in his comments on Dr. Schramm's proposals (*Science*, January 5, 1923), seems to prefer an analytical index, such as is furnished by the "Zoological Record." We agree with Prof. Cockerell; but, apart from that, the question is: Will a sufficient number of individuals be prepared to pay? The experience of the "Zoological Record" suggests that they certainly will not. This, however, may in part be due to the existence of the many competing, though less complete, abstracts and indexes, and in part to the ignorance and inertia of the workers. If, not only the American societies, but also the biological societies

of the whole world, would federate for this purpose, so that the proposed *Record* or *Abstracts* were virtually the only one in existence, and were thus inevitably brought before each individual worker, then success would be assured. But that "if" implies the suppression of vested interests and of the nationalism which hampered the International Catalogue.

THE theory of the tides is a very strong source of attraction for a certain group of unscientific speculators. One of the latest of these to put his ideas into print is Mr. Evan McLennan, of Oregon, from whom we have received a pamphlet entitled "Nature Notes, Critical and Constructive." After betraying a complete misunderstanding of the theory of the tide-generating force on the principle of gravitation, he remarks, "It would, quite probably, be regarded as a far greater violation of the principles of science to question the theory of gravitation than to swallow the inconsistency," and "Of the forty federal institutions established by our own Government alone for the purpose of scientific research and the increase and diffusion of knowledge, and of the more than 1500 investigators paid from the public treasury to do this work, there is in all probability not one who could be induced by an outsider to give the slightest attention to any vital criticism of the Newtonian theory of gravitation." We can assure Mr. McLennan that in his own country alone there is a large number of scientific men who would enthusiastically give their attention to any real inconsistency in the accepted theory of gravitation.

THE Corn Sales Act came into force on January 1, so that it is no longer possible for buyer and seller of corn in Great Britain to misunderstand each other as to the particular kind of stone in which a transaction had been conducted. All such transactions must now be in cwts. of 112 lb. The Union of South Africa has, according to the March issue of the *Decimal Educator*, adopted the cwt. of 100 lb., so that the same kind of difficulty is likely to be felt in dealings between South Africa and this country as we have just avoided here with regard to corn. In both cases the Decimal Association advises the use of the 50-kilogram standard, which is approximately 110 lb. In the same way, to overcome the difficulty of the American gallon being only about five-sixths of the British gallon, the Association and the Metric Association of America recommend the introduction of the litre for all trade in liquids. With regard to our coinage, the Decimal Association is concentrating its efforts on the introduction of a high-value penny, of which 10 would go to a shilling, and the withdrawal of the threepenny-piece. In place of the latter a double-penny nickel coin would be issued. It is not proposed that new penny coins should be issued.

THE annual meeting of the Iron and Steel Institute will be held at the Institution of Civil Engineers, Westminster, on Thursday and Friday, May 10 and 11. The Bessemer medal will be presented to Dr. W. H. Maw, and the award of the Andrew Carnegie research scholarship for 1923 will be announced.

Twenty-four papers will be presented during the meeting, and their subjects will be announced in the Diary of Societies in NATURE.

THE May lecture of the Institute of Metals for the present year will be delivered by Dr. W. Rosenhain at 8 o'clock on Wednesday, May 2, at the Institution of Mechanical Engineers. The subject will be "The Inner Structure of Alloys."

THE Hansen prize for distinguished microbiological work has been awarded this year by the committee of Danish trustees to Dr. E. J. Allen, director of the Marine Biological Association's laboratory at Plymouth, for his experimental researches in marine microbiology. It will be remembered that this award, to which we referred in our issue of February 3, p. 156, consists of a gold medal and a sum of 2000 kroner. Dr. Allen has been invited to visit Copenhagen to receive the medal and to deliver a lecture on his work on May 1.

A WELL-PRESERVED rib of the gigantic dinosaur, *Cetiosaurus leedsi*, obtained by the late Mr. Alfred N. Leeds from the Oxford Clay near Peterborough, has just been added to the other remains of the skeleton exhibited in the geological department of the British Museum (Natural History). The rib measures six feet in length, and is remarkable for its slenderness.

THE three lectures of the series on physics in industry arranged by the Institute of Physics last year will be published shortly in the series "Oxford Technical Publications." The fourth lecture of the series, entitled "The Application of Physics to the Ceramic Industry," will be delivered by Dr. J. W. Mellor on Wednesday, May 9, at 5.30 P.M., at the Institution of Electrical Engineers. Other lectures will be delivered later by Prof. C. H. Desch on "The Physicist in Metallurgy," and by Dr. A. E. Oxley on "The Physicist in the Textile Industries."

As no Bill providing for a period of Summer Time was passed by the French Chamber of Deputies before adjourning for the holidays, the French Government has decided not to define such a period this year, but merely to take particular measures in regard to holiday and health resorts.

THE seventy-sixth annual meeting of the Palaeontographical Society was held on March 31 in the Geological Society's rooms, Burlington House, Mr. E. T. Newton, president, in the chair. The annual report of the council referred to the reduction in the size of the society's annual volume owing to increased costs and smaller membership, but announced the early beginning of new monographs of Malacostracous Crustacea, by Mr. Henry Woods, and of Gault Ammonites, by Dr. L. F. Spath. Contributions had been received towards the cost of plates from the University of Bristol and from Mr. F. W. Harmer. Messrs. A. J. Bull, E. Heron-Allen, H. B. Milner, and A. Wrigley were elected new members of council. Mr. E. T. Newton was re-elected president, and Mr. Robert S. Herries and Dr. A. Smith Woodward were re-elected treasurer and secretary respectively.

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A NOTE on cleaner air for London appears in the *Meteorological Magazine* for March. The Public Control Committee of the London County Council is considering how far fog in London is the result of atmospheric pollution due to preventable causes, and how far the atmosphere may be improved by the larger use of electricity for power and other purposes. It is also being considered whether further powers are required to deal with the emission of smoke. Detailed reports have been prepared, and these appear to be under discussion by the Council.

A NEW type of pocket magnifier is now included in the optical products of Messrs. Cooke, Troughton and Simms, Ltd., Buckingham Works, York. We have had an opportunity of examining one of these. The lens consists of an achromatic doublet giving a magnification of five with a focal length of 2 in., an aperture of 0.85 in., and a field of view of about 2 in. in diameter. The field is flat and free from distortion and colour, and the definition is good over the whole of it. The lens is fitted in a duralumin mount which can be folded when the magnifier is not in use. Magnifiers of this type are now being supplied with powers of 2½, 5, and 10 respectively.

BEGINNERS in bee-keeping will find some useful information in Leaflet 128, recently revised by the Ministry of Agriculture and Fisheries. Bee-keeping is an occupation eminently suitable for small-holders, cottagers, and others with only a limited space available. The insects are, moreover, active pollinators of fruit blossoms, and consequently have other uses besides the production of honey. Having mastered the contents of this leaflet, we advise the beginner to procure the collected leaflets on bee-keeping (seven in number), which can be obtained from the Ministry, at 10 Whitehall Palace, S.W.1, at the low price of 6d., post free.

THE Gifford Emonds prize, value 100*l.*, which is awarded every two years for an essay on a subject dealing with ophthalmology and involving original work, and open to any British subject holding a medical qualification, is now open to competition. The subject chosen is "Iridocyclitis." Preference will be given to original work based on any branch of the subject, rather than to compilations of the writings of previous observers. Full particulars of the prize can be obtained from the Secretary Superintendent, Royal London Ophthalmic Hospital, E.C.1. Essays must be sent in not later than December 31, 1924.

MESSRS. H. SOTHERAN AND CO. (43 Piccadilly, W.1) have recently purchased and are offering for sale as a whole the library of books on British ornithology formed by Major W. H. Mullens. It contains about 3000 volumes, and ranges from the "Avium prae-cipuarum" of William Turner, 1544, to Beebe's recently completed "Monograph on the Pheasants."

THE catalogues issued by the firm of Bernard Quaritch, Ltd., 11 Grafton Street, W.1, are always of interest. The latest one (No. 376) contains up-

wards of 1700 titles (with, in many cases, comments) of books in the following subjects: botany, agriculture, early medicine and surgery, forestry, fruit-culture, gardens and gardening, herbals, and tobacco. As usual, many choice and rare volumes are included.

No. XI. of the "Publications de la Societe de Chimie Physique" is a short monograph of 15 pages on isotopes, by M. Maurice de Broglie, which was delivered as a lecture in November 1920. The previous publication was a lecture on Bohr's theory of the constitution of the atom. The monograph is published by Hermann et Cie at the price of 2 francs. Two series of somewhat similar monographs are being issued by the Libraire Scientifique Albert Blanchard. One of these, of which seven parts are announced, consists of groups of two or three lectures on physical subjects. In addition to these a series of foreign scientific monographs is being issued. The third of these, which has recently come to hand, is by Prof. Kossel, and bears the title "Les Forces de Valence et

les Spectres de Röntgen." The monograph covers 70 pages, and is issued at a price of 4.50 francs.

THE Society of Glass Technology, which has its headquarters at the University of Sheffield, has issued a useful handbook, a "Directory for the British Glass Industry," price 7s. 6d. to non-members of the Society. The volume is divided into sections providing lists both alphabetical and classified of glass manufacturers and craftsmen, with particulars in most cases of the class of work produced, and lists of firms supplying material and machinery required in glass making and working. The concluding short sections give useful information concerning industrial associations, trades unions, City Companies, educational institutions, and research associations, and publications dealing with glass technology. It is difficult to understand on what principle the selection of a group of publications, mentioned in the last section, which are referred to as "Periodicals in which articles on glass and ceramics occasionally appear," has been made.

Our Astronomical Column.

A SUPPOSED METEORITE AT QUETTA.—The *Pioneer Mail* for February 23 reports the fall of a supposed meteorite at Quetta on January 25, which, if confirmed, will for the first time establish the power of a meteorite to cause a conflagration. The fragments of the meteorite collected are said to weigh 6 tons, with a volume of 500 cubic feet! Hence the material must be abnormally light for a meteorite. It struck a large stack of closely packed straw 30 feet high, and penetrated it nearly to the ground. The "meteorite" is said to consist of materials like slate-grey igneous rock, volcanic glass, and coke. Possibly the stack was struck by lightning and the fused residue of the straw has been mistaken for a meteorite. The Geological Survey of India will doubtless settle the nature of this phenomenon.

SOLAR ECLIPSE INVESTIGATIONS.—At the meetings of the Australasian Association for the Advancement of Science held at Wellington, N.Z., two papers dealing with observations of the total solar eclipse at Wallal were communicated by Prof. A. D. Ross, who was a member of the Crocker Eclipse Expedition of the Lick Observatory. Shadow bands were observed for two minutes before and for one minute after totality. They altered in appearance, but the most persistent type was indistinct dusky bands about 6 inches wide, at 17-inch intervals, moving in a direction 30° S. of E. at 6 or 7 miles per hour. The bands at times came in groups and developed from a general shimmering effect. Their appearance was inconsistent with a diffraction theory, but suggested irregular refraction due to atmospheric temperature inequalities. The wind was from N.N.W. to N.W. at about 4 miles per hour, and there was a temperature drop of about 8° due to the eclipse. By comparison of six photographic plates exposed to a region surrounding the south celestial pole about mid totality and during twilight the same evening, it was found that the eclipse illumination corresponded to twilight with the sun 7½° below the horizon. Wellington Anti-screen plates were used. The humidity was about 45 per cent. at the time of totality and about 50 per cent. at twilight, so that

it is unlikely that the estimate of brightness was much affected by variation in the transparency of the atmosphere. Determination of the brightness of the corona was attempted with a specially designed integrating photometer, but the measurements of the plates had not been completed.

PLANETARY RADIATION.—No. 460 of the Scientific Papers of the Bureau of Standards, Washington, contains an account of researches made at Flagstaff by W. W. Coblentz on the thermal radiation from planets and stars. A cell of water 1 cm. thick is used to separate the long heat-waves from planets (due either to inherent heat or to warming of the surface by the sun) from the reflected solar radiation. A vacuum thermocouple made of bismuth wire was used to measure the radiations, the instrument being mounted on the 40-inch reflector. Observations on the moon are stated to confirm Very's results, but are not described in detail.

The observations lead to the conclusion that the planetary (long wavelength) radiations, expressed as percentages of the total radiation received from them, are Jupiter (0), Venus (5), Saturn (15), Mars (30), the moon (80). The high figures for the moon and for Mars indicate that rarity of atmosphere increases the warming of the surface; further, the northern hemisphere of Mars, which was in autumn, and more cloudy than the southern hemisphere, indicated a lower planetary radiation. It is hoped to compare the radiation from the orange and dusky regions of Mars, which might give a clue as to the conjectured interpretation of the latter as regions of vegetation.

The zero figure for Jupiter is concluded to be due to the enormously thick atmosphere, which acts as an opaque screen to the radiations from the (supposed) heated interior. The instrument is restricted to wavelengths 7 to 12 μ. Hence nothing can be stated about radiation between 4 and 7 μ, or from 12 to 15 μ.

The star temperatures are given as 3000° for type M, 5900° for Capella and sun (type G), and 12,000° for type B, in close accord with previous results.