

News and Views.

THE controversy which has arisen through the Admiralty Order of November 1925, which adversely affected the status of engineer officers in the Royal Navy, has been carried a step further by the publication of the Memorandum drawn up by the Joint Committee of the Engineering Institutions. We referred to the deputation which waited upon the First Lord, the Right Hon. W. C. Bridgeman, M.P., in our article "The Status of the Naval Engineer" in our issue of February 6, p. 185. Mr. Bridgeman's written reply is evidence of the conservatism which seems to pervade the Admiralty, and the reply of the Committee states that "they view his statements with grave concern as a symptom of the attitude of mind prevailing at the Admiralty." The Committee adds that it is proposed to take steps both in the Press and in Parliament to make its views known to the public. It certainly seems an anachronism to-day, when the engineering branch is of such vital importance, that the Engineer-in-Chief has not a seat on the Board, even when matters affecting his department are discussed.

THERE is an aspect of the question of the status of the engineering personnel of the Royal Navy to which attention should be directed. The Admiralty has published particulars regarding the forthcoming examination for special entry cadets, eight of whom will be required for the executive 'category' and twenty-five for the engineer 'category' of officers. On previous occasions when the engineering personnel question was in the limelight, there was a serious falling off in the number of candidates. We hope that this will not be the case now. The Navy never stood in greater need of the pick of our schools than to-day, and though parents and guardians may view with distrust the policy of the present Board of Admiralty, we believe that, in spite of the temporary set back it is suffering, the engineering branch of the Royal Navy has an ever-increasing national duty to fulfil.

AT the invitation of the Prime Minister of the Commonwealth of Australia, Sir Frank Heath, head of the Department of Scientific and Industrial Research in Great Britain, has for some time been inquiring into those problems presented by Australian primary and secondary industries which call for thorough scientific investigation. His object has been two-fold: to discover directions in which work in Australia may be linked with that now being carried on in Britain, and to advise the Government as to the most effective way of reorganising the Commonwealth Institute of Science and Industry. In his several public speeches on the subject of industrial research, Sir Frank has emphasised three points. The first is the present lack in Australia of thoroughly trained investigators, which is accentuated by the slight opportunity afforded to university science teachers for extensive research work; the

second is the urgent need for thorough understanding and co-operation between Commonwealth and State governments; the third is the necessity for concentrating at first upon problems of the primary industries. He has also emphasised the fact that the magnitude of the Australian continent greatly increases the price which Australia must be prepared to pay for adequate scientific investigation of her numerous problems. The distance factor, indeed, makes the general Australian problem of organisation very different from, and in some ways much more difficult than, that which is being met in England by the Department which Sir Frank Heath superintends.

THE Friday evening discourse at the Royal Institution on March 19 was entitled "Chips from a Sculptor's Studio," and was given by Mr. John Tweed, who designed the equestrian statue of Sir George White in Portland Place. As a practical sculptor Mr. Tweed told how a statue is made. The size and material are chosen to suit the surroundings—bronze being the most suitable if the statue is to be exposed to the weather. Expression is first conveyed to the clay sketch. The material is on a skeleton form. The process the Egyptians first used was the plaster cast and then the finished work in the material chosen. The thinness of the bronzes used by the earlier artists cannot be attained at the present time, and there is need for science to discover a more suitable bronze for statuary. In sculpture proper, carving in marble is done with a specially designed instrument by a carver, and then the sculptor completes the work. The material naturally used by the Greeks was marble. The artist gets his inspiration by studying Nature, that he may show the aspect of Nature in his work. Photographs of examples of Egyptian and Grecian sculpture in various materials were shown.

ACCORDING to a dispatch from the *Times* correspondent at Delhi, the Assembly on March 18 rejected the proposal of the Government of India to vote a sum of 375,000*l.* to the Institution of Archaeological Research Fund. The proposal was strongly opposed by several Hindu members, who put forward the claims of university and medical education, and by English unofficial members, who argued that the establishment of an equivalent British Museum fund would remove archaeological investigation from the annual criticism of the legislature. As no provision had been made in the Budget for archaeological research in the expectation that the proposal would be accepted, it was agreed that a supplementary demand for 15,375*l.* should be submitted on the following day. The decision of the Assembly will cause profound disappointment to those who appreciate the importance of the work which is now being carried out by the Archaeological Department and are acquainted with present conditions in India. It had been anticipated with some confidence that

this vote would place archaeological studies in India on a sound basis and would enable a scheme of research covering a period of years to be framed, affording an opportunity of training workers in the principles and methods of archaeological investigation—a matter of supreme moment now that the discovery of a centre of prehistoric culture in the Indus Valley is likely to give investigations in this area an importance in the history of civilisation at present incalculable. Sir John Marshall in a recent speech, in referring to the discoveries at Mohenjo Daro and Harappa, spoke of the possibility of inviting co-operation from outside; but whatever form such co-operation might take, there should be some assurance that India itself will be prepared in the main to accept responsibility for the continuance of this important work by competent and fully trained archaeologists.

THE forthcoming polar flight of Captain R. Amundsen was the subject of a recent lecture in Rome by Col. U. Nobile, who will command the dirigible airship of the expedition. The lecture is now published in an illustrated pamphlet containing maps of the route. From a study of weather conditions in the Arctic regions, Col. Nobile believes that spring offers the best chance of steady weather and long range of visibility. He thinks that the flight should be made not later than May. The route will be from King's Bay, Spitsbergen, where mooring-posts for the airship are now being prepared, to Point Barrow in Alaska. This route crosses the heart of the unknown area in the Beaufort Sea, and should lead directly across Crocker Land, if that land exists. A problem of some importance is the selection of a route to Spitsbergen from Rome. The alternatives are Rome, London, Pulham, Trondhjem, Spitsbergen; or Rome, Fredericks-haven, Leningrad, Murmansk, Spitsbergen. The second route is 500 miles longer than the first, but offers greater probability of quiet weather conditions, and would appear at present to be the route selected. Col. Nobile expresses great confidence in the prospects for a successful flight.

WITH the object of giving the American public a bird's-eye view of the services rendered by the National Bureau of Standards, a special circular has been prepared in which its activities are described in non-technical language. It contains 113 pages, 86 illustrations and a plan of Washington showing how the Bureau may be reached. The visitor is supposed to be taken through the various departments in turn, and is told the main purpose of each and how it is attained. In many cases some striking result which has followed from the work done in the department is mentioned, as for example the scientifically designed gas burner which gives an efficiency four times that of the usual burner and will effect a saving of 50,000*l.* per day to the United States; and the standardisation being gradually introduced into industry which will reduce the number of unnecessary sizes and varieties of products. The circular forms an interesting and important document and should remove any misgivings as to the great value of the Bureau as a national investment.

NO. 2943, VOL. 117]

MR. C. LEONARD WOOLLEY's monthly progress report of excavations in Mesopotamia on the site of the temple of the Moon Goddess at Ur, which appeared in the *Times* of March 16, records several discoveries of exceptional interest. Among these is a small chamber containing three stelæ inscribed with the name of Bur-Sin, apparently a shrine for the cult of the deified founder of the temple—a find unique in Mesopotamian discoveries. There is also a diorite statue of the goddess Bau, patroness of the poultry-yard, in the form of a squat seated figure in an elaborately flounced dress, which is the first female statue of early date to be found in Mesopotamia. An alabaster lunar disc dedicated by a daughter of Sargon of Akkad (2750 B.C.) shows in relief a sacrifice to the goddess by a priestess, who may be the princess herself; while a limestone plaque dating from well before 3000 B.C., an excellent example of the early art of the country, carved in relief in two registers, shows sacrificial scenes in which in one case the king, and in the other a priest and priestess, pour libations to the god.

VOL. 69 of the *Memoirs and Proceedings of the Manchester Literary and Philosophical Society* contains the inaugural Ludwig Mond Lecture delivered in the University of Manchester on October 20, 1924, by Prof. H. B. Dixon. Prof. Dixon traces in an interesting manner the rise of the alkali manufacture and the share which Ludwig Mond had in its development. In partnership with John Brunner, Mond started the Solvay ammonia soda process at Winnington in 1873, and in the face of really imposing difficulties they made the process, which had failed in the hands of previous technical men, a success. Mond's contributions to pure and applied science are recorded, and his generosity in helping research is especially commented upon. Ludwig Mond was an example of a rare combination of keen interest in pure science with great ability in its application to the problems of industry.

SOME account of Russian scientific exploration in Arctic Russia and Novaya Zemlya is given in several recent issues of the *Weekly News Bulletin* of the U.S.S.R. Society of Cultural Relations with Foreign Countries. For the past four years an expedition under Prof. Samoilovitch has been at work in Novaya Zemlya, and succeeded last summer in rounding the northern end and exploring the little-known north-east coast, discovering several new gulfs and making minor changes in the charts. A site has been chosen for a radio station, for meteorological purposes, at the northern end of the north island. Another expedition under Prof. Suvorov has been exploring the little-known Cheshskaya Gulf of the Kanin Peninsula and examining the fisheries of the coast. Investigations in biology and anthropology have also been conducted in Kolguev and the Kola peninsula, and experiments have been made in several districts of the north in the use of a serum against anthrax in reindeer. All these and other researches are to be continued next summer.

IN the National Museum of Wales at Cardiff there are two important collections of British Lepidoptera, the Vivian and the Griffith, which together comprise more than 50,000 specimens. The authorities of the Museum have recently issued a "Guide" (price 6*d.*) to these collections, which directs attention to many interesting and scarce specimens of which no previous record has been published. The occurrence and distribution of various Lepidoptera in Wales are also indicated in this pamphlet, while a number of the rarer species are illustrated on two coloured plates. The booklet will prove of interest to collectors and others with respect to unique or very rare specimens contained in the collections, since it gives the localities and other data associated with them. So much is heard respecting the disappearance of rare or local Lepidoptera that it is refreshing to learn from this pamphlet that, at any rate, the white-letter Hair-streak, *Thecla w-album*, appears to be extending its range in so far as Wales is concerned.

THE "Report of the Health of the Army for 1923," recently issued, contains details of some interest. Judging by the invaliding rate, the health of the Army was better in 1923 than in the previous two years, but not so good as in the period 1906-13. It is surprising to learn that tonsillitis takes third place, with 5566 cases, as a cause of admission to hospital, malaria with 13,158 cases and venereal diseases with 10,807 cases being first and second respectively. No definite reason could be assigned for this high incidence of tonsillitis. At the head of the list of diseases which cause the greatest amount of invaliding out of the Army comes inflammatory conditions of the middle ear, with 451 cases—nearly half a regiment! The Royal Army Medical College, in addition to courses of instruction and research work, now prepares all the bacterial vaccines and allied substances employed in the Army, which were formerly purchased, at a saving estimated at 12,650*l.* for the year.

DR. R. E. M. WHEELER, since 1924 Director of the National Museum of Wales, has been appointed Keeper, Secretary, and Accounting Officer of the London Museum, in succession to Mr. F. A. H. Oates, who has retired.

PROBABLY no division of biology has so many journals devoted to its various aspects as entomology. A new American periodical, *The Pan-Pacific Entomologist*, a quarterly journal of general entomology, was inaugurated last year. The first volume, consisting of four numbers, has been completed and vol. 2 is now appearing. The journal is published by the Pacific Coast Entomological Society in collaboration with the California Academy of Sciences. Although primarily intended for furthering an interest in the entomology of the coastal region of the Pacific side of America, papers of broader significance are not precluded. The annual subscription is 2 dollars for the U.S. and Canada, and 2.25 dollars for elsewhere. Sample copies are obtainable from Mr. F. E. Blaisdell, 1520 Lake Street, San Francisco, California.

NO. 2943, VOL. 117]

REFERENCE has frequently been made in the columns of NATURE to the difficulty experienced in central European countries, since the War, in gaining access to outside scientific proceedings and publications. In many of the smaller Continental universities this condition still prevails, and cannot be ameliorated owing to the lack of funds for the purpose. Much valuable assistance could be rendered in this matter, however, if workers in the various branches of science were to make a point of sending reprints of their publications to the leading Continental exponents of the subject concerned. In physics, the need of such an arrangement is particularly acute at the present time, when two "Handbücher" of physics are in preparation. Prof. K. W. F. Kohlrausch has been entrusted with the volume on "Radioactivity" in one of these "Handbücher," and he has written to us suggesting that workers in radioactivity forward to him their publications in this subject, so as to enable him to bring his work completely up-to-date by first-hand reference to original papers. He would be very grateful if the authors of such papers would assist him in this manner, by sending reprints to: I. physikalisches Institut, Technische Hochschule, Graz (Austria).

AT the Southampton meeting of the British Association in August last year, a number of papers were read by officials of the Ordnance Survey. These papers are now collected and printed in full in Professional Papers, New Series, No. 10 (H.M.S.O., price 9*d.*), and include an admirable general account of the work of the Ordnance Survey by Col. E. M. Jack; a paper on recent productions by Capt. J. G. Withycombe, in which announcement is made of a new three-sheet map of Great Britain on a scale of 10 inches to a mile; a paper on archæology and the Ordnance Survey by Mr. O. G. S. Crawford; and an account of the present state of the international 1/M map by Maj. M. N. Macleod. The publication gives a useful summary of the present state of the survey and maps of Great Britain.

MESSRS. Gurney and Jackson announce the early publication of "A Text Book of Organic Chemistry," by Prof. Julius Schmidt, translated by Dr. H. Gordon Rule; and "A Text Book of Inorganic Chemistry," by Prof. Fritz Ephraim, translated by P. C. L. Thorne.

CATALOGUE No. 398 of Messrs. Bernard Quaritch, Ltd., 11 Grafton Street, W.1, will appeal to zoologists and geologists, especially if they are interested in rare and choice editions, for it contains particulars of nearly 1800 works, many of which are out-of-print and scarce.

MESSRS. H. K. Lewis and Co., Ltd., have recently issued two interesting lists of second-hand books dealing respectively with "Early Scientific Works and Biographies," and "Early Medical Works—Medical History and Biography." Either list, or both, can be obtained free upon application.

APPLICATIONS are invited for the following appointments, on or before the dates mentioned:—An assistant to carry out research work on miners' electric

lamps—The Under-Secretary for Mines, Establishment Branch, Mines Department, Dean Stanley Street, S.W.1 (April 9). A junior chemist at the Building Research Station, Garston, near Watford, for investigations on the heating and ventilation of buildings—The Secretary, Department of Scientific and Industrial Research, 16 Old Queen Street, S.W.1 (April 10). A professor of zoology in the University of Cape Town—The Secretary, Office of the High Commissioner for the Union of South Africa, Trafalgar Square, W.C.2 (April 14). A professor of physics in the University of Tasmania, Hobart—The Agent-General for Tasmania, Australia House, Strand, W.C.2 (April 15). A junior scientific officer for work connected with aeronautical instruments at the Royal Aircraft Establishment—The Superintendent, R.A.E., South Farnborough, Hants (April 17) (quoting Ref. A. 107). A principal of the Sir John Cass Technical Institute—The Correspondent, Sir John Cass's Foundation, 31 Jewry Street, Aldgate, E.C.3 (April

24). A junior lecturer in mathematics, a lecturer in geography, and a lecturer in geology and palaeontology at Bedford College for Women—The Secretary, Bedford College for Women, Regent's Park, N.W.1 (May 8). A professor of natural history in University College, Dundee—The Secretary and Registrar, The University, St. Andrews (May 8). A professor of physics in the University of Dacca, Bengal—The Registrar, University of Dacca, East Bengal, India (June 30). A test assistant for aircraft and instrument test work at the Aeroplane and Armament Experimental Establishment, R.A.F., Martlesham Heath—The Secretary of the Air Ministry, Aadastral House, Kingsway, W.C.2 (quoting S. 2/R. 461). An assistant lecturer and demonstrator in botany at the South-Eastern Agricultural College, Wye, Kent—The Secretary. A pathological laboratory assistant for the Veterinary Department of the Government of Nigeria—The Crown Agents for the Colonies, 4 Millbank, S.W.1 (quoting M/14292).

Our Astronomical Column.

PENUMBRAL LUNAR ECLIPSES.—The January issue of *L'Astronomie* contains an article by M. Gaetan Blum on this subject. Consideration of these eclipses is necessary to make the theory complete; when they are included there must be one lunar eclipse at every passage of the sun through either node, and there may be two. The almanacs as a rule do not give predictions of penumbral eclipse, but they have done so occasionally by some caprice. Eclipses in which the moon penetrates deeply into the penumbra are quite readily observable, it being obvious that a portion of the moon is dimmed by a smoky veil. There will be an eclipse of this kind on December 19 next, full moon being at 6^h 8^m A.M., so that it will be visible in Great Britain. The least distance of the moon's limb from the umbra will be less than a minute of arc. The article notes that the phenomenon is rendered more noticeable if the moon's light is weakened by reflection at an unsilvered glass surface.

A very instructive diagram shows all the eclipses of a Saros cycle (1908 to 1926), different symbols being used for each species of eclipse. It brings out clearly both the approximate 4-year cycle of recurrence and the much more exact one in 18 years 11 days.

The same publication contains a photograph of the solar eclipse of January 24, 1925, taken by Prof. Slocum at Middletown, and a diagram showing the exact position of the southern boundary of totality across New York as deduced from the observations made there.

THE JOHANNESBURG 24-INCH REFRACTOR.—This instrument is now in full working order, and is giving satisfaction. The outer portion of the lens is less good than the rest, so a slightly diminished aperture is employed.

Dr. Van den Bos, of the University of Leyden, is engaged on an exhaustive search for southern double stars with the instrument. He has already found more than 180 new pairs, while according to a message which was published in the *Times* some weeks ago, the star β -Tucanæ has been found to consist of three separate pairs, making a splendid sextuple system. This rapid increase of the known southern binary systems calls for a new general catalogue of these objects, which is now in course of preparation at the Union Observatory. It is being printed by a type-

writer and will be issued in separate sheets, so that new pages can easily be inserted.

It is noted that the planet Pallas appeared on a recent occasion exactly like a close binary star, and was for a time mistaken for one.

THE TEMPERATURE OF SUNSPOTS.—A preliminary paper on this subject by Prof. V. Bjercknes appears in *Comptes rendus*, 182, 48, 1926. The author has contributed largely to the dynamics of meteorology, and his important investigation on the "Dynamics of the Circular Vortex" will be found in *Geofysiske Publikationer*, vol. 2, No. 4, Christiania, 1921. In the present paper the general principles previously established by him are applied to the problem of sunspots, in which the relative coolness is considered by him as an analogous phenomenon to the relatively low temperature in terrestrial cyclones. He postulates a fluid medium possessing a free surface and the properties of a gas with density increasing downwards more rapidly than would result from compression. For a horizontal vortex in such a medium, Prof. Bjercknes develops an expression for the fall in temperature ($\Delta T = T - T_0$) in the central part of the vortex— $\text{nat. log } T/T_0 = 2D/H$, where D is the depth of the depression of the free surface, and H is the depth to which vortical motion extends. Applying this formula to a sunspot vortex, given $T = 6000^\circ$, the following depressions of temperatures are given:

$$\begin{array}{cccccccc} D/H = & 0.001 & 0.01 & 0.1 & 0.2 & 0.3 & 0.4 & 0.5 \\ \Delta T = & 12^\circ & 120^\circ & 1100^\circ & 2000^\circ & 2700^\circ & 3300^\circ & 3800^\circ \end{array}$$

It is found as a corollary that the velocities in corresponding vortices should range from a fraction of a kilometre to 20 km./sec. The theory is stated not to be invalidated by the possible absence of a free surface in the sun, so long as there is a rapid change in the densities of the solar gases from photosphere outwards.

It may be added that the temperature of a sunspot at photospheric level is generally considered to be about half that of the photosphere itself. Prof. H. N. Russell, in a "Note on Cooling by Expansion in Sunspots" (*Astrophysical Journal*, 54, 293, 1921), gives as the temperature of the photosphere 6000°C. ; of the spot at the same level, 3500° to 4000°C. ; at base of the spot vortex, probably $20,000^\circ \text{C.}$ (rough estimate).