

News and Views.

IN our Supplement of this week will be found the main part of Sir Richard Glazebrook's Guthrie lecture to the Physical Society of London. The lecture was founded to perpetuate the name of Frederick Guthrie, the physicist through whose action in 1873 the Society was formed. Born in Bayswater in 1833, Guthrie studied chemistry under Graham and Williamson at University College, London, and also under Bunsen at Heidelberg and Kolbe at Marburg. Returning to England, he held posts at Owens College, Manchester, and the University of Edinburgh, and from 1861 until 1867 was professor of chemistry and physics in the Royal College, Mauritius, where he had as a colleague Walter Besant, the novelist. In 1869 he became a lecturer in physics at the Royal School of Mines and the Normal School of Science, South Kensington, and this post he held until his death on Oct. 21, 1886. John Hall Gladstone (1827-1902) became the first president of the new society, and Guthrie occupied that position in 1884. Unlike Guthrie, who was a chemist first and a physicist afterwards, Sir Richard Glazebrook has devoted all his life to physics. Born in 1854, after graduating at Cambridge he became one of the first demonstrators under Maxwell in the Cavendish Laboratory, and held other posts in the University. His main work has been done in the National Physical Laboratory, of which he became the first director in 1899. During his period of office, which lasted twenty years, he saw the staff increase from three persons to more than five hundred, and under him the Laboratory came to fulfil its object, "to make the forces of science available to the nation".

To Sir Richard Glazebrook the subject of standards has been a lifelong study, and his Guthrie lecture is a valuable and authoritative review of the ancient standards, the connexion between ancient and modern standards, and the scientific methods by which the latter are examined, compared, and reproduced. As in so many other matters, the first application of science to the question of the weights and measures of Great Britain was due to the Royal Society, while the replacement of the old French measures by the metric system was due to members of the Paris Academy of Sciences. Graham, Bird, Troughton, Kater, Baily, Sheepshanks, and Miller were among those who introduced accuracy into British standards, while the history of the metric system is connected with such famous names as those of Lagrange, Laplace, Borda, and Condorcet. Not the least interesting part of Sir Richard's lecture is that dealing with the modern methods of basing standards on the length of the seconds pendulum, the quadrant of the earth, or the wave-length of light.

THE annual inspection of the National Physical Laboratory by the general board, on June 23, was made this year the occasion for the official opening of the new physics building by the president of the Royal Society, Sir Gowland Hopkins. Sir Richard Glazebrook, the first director of the Laboratory, and

Sir J. J. Thomson, Master of Trinity College, Cambridge, and chairman of the research committee of the Laboratory, also took part in the ceremony. In the course of a brief sketch of the history of the laboratory since its formal opening in Bushy House in 1902 by the then Prince of Wales, Sir Richard Glazebrook referred to the early difficulties of the Royal Society in finding a suitable site for the laboratory. Sir Richard traced the development of the laboratory during the time that he was director and later, when he was succeeded by Sir Joseph Petavel; and he contrasted the space allotted to physics in the early days with that now necessary to meet the requirements of the physics department. A warm tribute was paid to the interest and insight of the many eminent men of science and engineers who have made possible the continued development of the laboratory.

SIR J. J. THOMSON in a brief speech pointed out that the choice of the Bushy Park site has been more than justified, on account of the tremendous expansion which has taken place since the laboratory was first formed. Sir Joseph referred to the place of the laboratory in the general development of pure and applied science, and to its relation to university and industrial laboratories. At the conclusion of the addresses, the new building was formally declared open by Sir Gowland Hopkins, and those present were afforded an opportunity of inspecting it. The design for the new building was prepared by Mr. F. A. Llewellyn, of H.M. Office of Works. The proposed building has a frontage of 295 feet with wings of 135 feet in length, forming three sides of a rectangle. The central portion only, with a frontage of 180 feet, has been erected at present, and will be used to accommodate the heat and general physics section of the physics department, with part of the radiology and sound divisions.

ON June 24, H.M. the Queen opened the Tuke Building at Bedford College for Women (University of London). The new building, the foundation-stone of which was laid by H.R.H. Princess Mary, completes a quadrangle and is dignified and stately, if rather severe in outline. The total cost of the building will probably exceed £110,000, of which a little more than three-quarters has been raised by grants and donations. Among its features are a fine lecture hall capable of seating the entire student body of the College, new laboratories for physical and inorganic chemistry, experimental psychology, and physics, besides accommodation for other departments, including philosophy and mathematics. Perhaps the most attractive feature of the new extension, for those interested in science, is the astronomical observatory, containing a seven-inch refracting equatorial by Grubb, generously presented by the Woolwich Arsenal Institution. The Department of Psychology occupies the first floor of one wing and comprises a lecture room and laboratories. The latter are well equipped with modern recording apparatus and material for studying the

special senses. A pendulum tachistoscope is built into one of the walls. There is also a kodescope for the projection of films in the study of evidence and report. Special features of the new chemical laboratories are the replacement of gas heating by electrical devices—we hope that the bunsen burner, that symbol of the nineteenth century laboratory, has not vanished completely—and the arrangements for lighting and ventilation. The name of the new building commemorates the long principalship (1907–29) of Miss Margaret Tuke, who contributed so much to the success and present position of the College.

THE Repton School Science Society was founded in 1866 and has had an almost unbroken existence since that date. Among the original members of the Society are numbered Prof. F. O. Bower and Sir Martin Conway, M.P., and the records of the earliest meetings are interesting in that they show that the subjects discussed have now become part of the routine science teaching in the school. The Society held a conversation at Speech Day, June 26 and 27, which consisted of short lectures, demonstrations, and exhibits in physics, chemistry, and biology. The physics section included, among other things, a lecture on X-rays, in which members of the audience were 'screened' to show the heart beating and the bones of the arm; there was also a lecture on the electrical gramophone, illustrated by records kindly lent by the Bell Telephone Laboratories, New York. The demonstrations included the principle of the Radiovisor burglary alarm, and a model to show the effect of coal dust on explosions in mines. There were lectures on dyes and liquid air in the chemistry section, and among the demonstrations were a set of experiments to illustrate bleaching and a group of experiments on electroplating. A notable feature of this section was a model of a petroleum refinery, lent by the British Petroleum Company. The biology section contained numerous dissections and exhibits, a micro-film of simple unicellular organisms actually taken by members of the Society, and a demonstration of blood circulating in the tail of an anaesthetised tadpole. Living chick embryos in various stages of development were also shown.

NINETY-FIVE heads and skulls of Asiatic and American ungulates and carnivores have been selected for the British Museum (Natural History) from the collection of the late C. St. George Littledale, and form the most important addition to the collection of Asiatic ungulates since the Hume bequest came to the Museum in 1912. The Zoological Department of the Museum has purchased a specimen of the pigmy hippopotamus from the French Ivory Coast. This animal is confined to a comparatively small area of West Africa, and does not seem to extend into the great forest zone of the Congo. The New York Zoological Society has presented to the Museum a skeleton of the extinct giant tortoise of Charles Island, Galapagos. In 1832 the island was colonised, and within a short time the animals were exterminated. There was considerable doubt as to the exact species until a large number of complete skeletons, of which

the present specimen is one, was discovered in a cave by Dr. C. H. Townsend in 1928. The collections brought home by Mr. Bertram Thomas from the Rub'al Khali, Arabia, are now being worked out, and a selection has been placed on exhibition in the Central Hall of the Museum. The mammals include two foxes of interest, an Arabian race of the common fox, and a fennec fox. The reptiles of the desert region are chiefly Asiatic in their relationships, whereas the affinities of those of the Qara Mountain region are with the reptiles of East and North-East Africa. The insects demonstrate very clearly the strong affinity existing between the fauna of southern Arabia and Africa. Many species have not been observed hitherto outside Africa; there is also a marked Mediterranean element. Recent acquisitions in the Mineral Department include two small diamonds, the first found in Sierra Leone; a piece of an unusual type of stony meteorite which was seen to fall on Nov. 25, 1930, at Karoonda, South Australia (see NATURE, Mar. 14 and April 25); and a mass of meteoric iron weighing 125 lb., found in 1922 at Piedade do Bagre, Minas Geraes, Brazil, which is a single crystal individual.

IN an interesting letter to the *Times* for June 16, the Rev. J. P. Rowland, S.J., has estimated the position of the epicentre of the North Sea earthquake of June 7. From the times of the first and second phases on the Kew and Stonyhurst records, he finds the time at the origin to be 0 h. 25 m. 12 s. G.M.T. From this and the time of arrival at six British observatories, the distances of the origin from the various observatories were calculated and arcs of circles were drawn on the map with the stations and distances as centres and radii. The point in which the arcs for Kew and Stonyhurst intersect is adopted as the epicentre, namely, 53° 43·8' N., 0° 53·2' E. The arcs from the other stations, with the exception of Oxford, form a small triangle at distances of not more than two miles from this point. According to the *Daily Science News Bulletin* (June 8), issued by Science Service, Washington, D.C., the earthquake had but little effect on the seismographs in the United States. It was recorded at Washington and rather indefinitely at Georgetown University.

CONTINUOUS daily records of the hours of bright sunshine have been made by many of the meteorological stations in all parts of the world for many years, and these records have proved useful in various lines of scientific research. In one of the usual methods, a record is burned on a card by the solar rays concentrated by a glass sphere. Provided the instructions given with the instrument are carefully followed, this method gives fair results. Difficulties arise in interpreting the results on a day when the sun has been intermittently obscured by numerous small but dense cumulus clouds. The burned spots have to be considered collectively, and the estimate made of the total hours is only a rough approximation. In the *Canadian Journal of Research* for March 1931, Wallace A. Thomson describes a method of recording the bright sunshine by means of a photoelectric cell

and an electric clock. When light of a definite intensity falls upon the photoelectric cell, the electric clock is automatically started by the action of a relay. This relay also stops the clock just as promptly when the sun disappears behind a cloud or below the horizon. It is thus only necessary to read the time on the clock at the end of each day, when the number of hours it has been running since it was last observed gives the number of hours of sunshine during that period of time. Comparative records are given of the hours of bright sunshine observed during a week at Manitoba Agricultural College by the author's cell and clock, by two types of sunshine recorder, and by personal observations by the author. It was found that the photo-cell and clock method never omitted any portion of the daily record that would not be considered questionable. On several days, the clock continued to operate until only half the sun was visible above the horizon. The other methods sometimes omitted about two hours of the record.

STRIKING progress continues to be made by the recently formed industry for canning English-grown fruits and vegetables. During the last two years, the number of firms in operation has risen from five to nearly forty, and the output has increased fourfold since 1928. The application of the National Mark Scheme in 1930 considerably stimulated the demand for English canned products, and although during this first season the scheme was applied to some half-dozen fruits and vegetables only, yet more than fifty per cent of the total output (which equalled the total imports of canned fruits other than pineapples from the rest of the Empire) was packed under the mark. Further, the high standard of quality required was well maintained. Encouraged by this success, the Ministry of Agriculture states in a recent weekly news-sheet that it is now extending the scheme to a much larger number of fruits and vegetables. Careful attention is also being paid to standardisation, particularly as regards sizes of cans, weight of fruit, and strength of syrup. Four sizes of cans will be put on the market, and two different strengths of syrup will be available. Lacquered cans, although already widely employed, will be required for red and blue fruits and for peas and beans sold under the National Mark Scheme. A large market for English canned produce is available in the Empire, particularly in South and East Africa and in India, several consignments having already been dispatched, but careful co-operation between the fruit and vegetable growers and the canner is necessary, if full advantage is to be taken of this rapidly expanding market.

THE most striking feature of the National electricity scheme in Great Britain is the grid, the common distribution mains of all the selected power stations. This makes necessary the standardisation of all systems of supply, and to effect this many difficulties have to be overcome. The principal difficulty is the standardisation of the frequency of the alternating current supplied by the various companies. The cost of this work was not over-estimated when it was put at eighteen million pounds, but it is defrayed by the Central Electricity

Board in the first instance and will afterwards be recovered by a levy on the whole of the electricity supply undertakings in the country. There are three main areas affected. In central Scotland the Glasgow Corporation and the Clyde Valley Co. are changing over from 25 cycles to 50 cycles. A similar change is being made in Birmingham. The operation has to be done gradually, as provision must be made for the continued use of consumers' machinery during the change. The most difficult problem of all is the conversion of the north-east England scheme, where the greater part of an area of over five thousand square miles is supplied at a frequency of 40.8 cycles per second. A change of frequency affects every piece of rotating apparatus, from the power house to the smallest domestic motor. All electromagnetic devices are more or less affected. In making new installations it is necessary to erect machines which can work at dual frequency or, at least, which can readily be converted from one to the other. As the Electricity Board points out, this change gives an opportunity to many important industrial works of economically modernising and re-equipping their electrical machinery. Many ways of doing this are described in the *English Electric Journal* for June.

THE keen competition that is taking place for overseas traffic makes it necessary for marine engineers to keep abreast of the latest engineering developments. The expenditure of several millions on a new liner is only justified if it remain an efficient unit for at least twenty years. Too slavish an adherence to the policy of 'safety first' may lead to it being outclassed by a competing vessel. In the *Electrical Times* for June 4, A. D. Constable discusses fairly fully the case for the use of electric propulsion in a large high-speed liner. A detailed scheme is worked out, and he advocates notable innovations in marine engineering practice. At first sight a direct mechanical drive between the turbines and the propeller shaft seems more desirable than to install electric generators and motors between them, especially as the transmission losses in the case of large liners are about six per cent less for the mechanical drive. The cost of the electrical machinery is also the greater. On the other hand, the great flexibility of the electric drive, the possibility of using five propeller shafts and twin rudders, the economical working at all speeds, and the great convenience of having all the auxiliary services on board ship worked electrically, in many cases indicate that the all-electric ship is the more economical. Provided that every electrical machine and device is of the best materials and design and in accordance with the most modern specifications, the ship should run in all weathers with freedom from trouble and anxiety, and with an economy hitherto not reached in marine work. If in addition higher steam pressures were used in the boilers, a very appreciable reduction might be made in the excessive amount of space now occupied by the boilers.

THE annual report of the Director of the Imperial Institute, Lieut.-Gen. Sir William Furse, shows

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evidence of a large increase in public interest in the Exhibition Galleries in the Institute, the attendance during the year being 608,900, as compared with 398,000 in 1929. The more important work of the Institute, however, in advising as to the utilisation of the resources of raw materials in the British Empire and in promoting the production within the Empire of crops and products which at present are mainly obtained elsewhere, is still hampered by lack of funds. The Research Committee of the Imperial Conference, which met in London in 1930, investigated the Intelligence and Investigation Departments, which are mainly concerned with this vital but less publicly known work of the Institute, and recorded its opinion that this work could be carried out more efficiently and less expensively through the utilisation of the services of the Imperial Institute than in any other manner. During the present Empire-wide depression, no further Government funds are available to extend the Institute's work, but in March 1931 the Secretary of State for the Dominions was able to announce that Mr. Benjamin Drage had contributed £36,000 to the Empire Marketing Fund with the proviso that the sum, to be spread over a period of seven years, should be used to augment the income of the Imperial Institute. The Institute not only advises the Colonies and Dominions upon mineral resources; it is also busy trying to develop the production of commodities like tung oil, pyrethrum flowers, and so on within the British Empire, and is able to report that the London County Council has approved five Empire woods as fire-resisting timbers. The perusal of the Director's brief report will show how wide-flung are its activities.

MR. J. MILTON OFFORD has contributed to the March *Journal* of the Quekett Microscopical Club some interesting recollections of his association with the Club since 1878. At the meeting in January 1879, at which he was elected a member of the Club, Huxley was in the chair and E. T. Newton showed a model of the brain of the cockroach, constructed from slices of wood of appropriate thickness representing the successive serial microscopic sections of the brain. The outlines of the section had been drawn on the slices with the help of a camera lucida and cut out by a fret-saw. These prepared slices when fitted together formed the model—one of the early examples of a method which, after modifications, was, especially in the next twenty years, and still is, regularly employed in many laboratories. Mr. Offord refers to the large conversaziones which were a feature of the society's activities, and directs attention to one held in University College, London, in 1879, at which there were 185 microscopes, and 1050 persons were present. This was regarded as a small attendance for a conversazione and "was put down to the inclement weather, and it being held during Lent".

ON June 27, Prof. G. M. Trevelyan, O.M., representing the National Trust, accepted the deeds of the property of the Longshaw estate for the Trust. This estate is 750 acres in extent, and is the first acquisition made by the National Trust in the Peak district of Derbyshire. It is a beautiful stretch of high woodland and moorland, surrounded by picturesque

heights. When it was offered for sale, a sum of £15,000 was asked for the complete estate, and, since it was threatened to be disposed of as building sites, the Sheffield Council of Social Service and the Sheffield and Peak District branch of the Council for the Preservation of Rural England took steps to save the estate. £11,000 came from the city and neighbourhood of Sheffield and £3580 from other parts of the country, chiefly through the National Trust. The deeds of the estate were handed over to Prof. Trevelyan by Mrs. Gallimore, honorary secretary of the Longshaw committee.

ON June 24 the Royal Society of Tropical Medicine and Hygiene moved its offices from Chandos Street to Manson House, 26 Portland Place, which has been secured as its permanent home and as a memorial to the late Sir Patrick Manson. With the help of Joseph Chamberlain, then Colonial Secretary, Manson founded the London School of Tropical Medicine in 1897; other countries followed suit and similar institutes have been set up in Hamburg, Amsterdam, Paris, and other centres. It was soon realised that this new knowledge should be co-ordinated, and in 1907 Sir James Cantlie, Dr. Carmichael Low, and others founded the Society of Tropical Medicine and Hygiene, with Sir Patrick Manson as its first president. Though Manson died in 1922, there was no adequate memorial to him, and last year the council of the Society resolved to buy and equip a house which should be known as Manson House in memory of Sir Patrick, and at the same time form a permanent home for the Society. A sum of about £11,000 has been collected and subscribed for this purpose, but a further £17,000 is required to complete the scheme. Any donations, great or small, will be gratefully acknowledged if sent to the president, Manson House, 26 Portland Place, London, W.1.

SIR SIDNEY F. HARMER, formerly Director of the Natural History Departments of the British Museum, has been elected an honorary member of the Société Zoologique de France.

THE South Africa Medal for 1931 of the South African Association for the Advancement of Science has been awarded to Prof. H. B. Fantham, of the Department of Zoology and Comparative Anatomy in the University of the Witwatersrand, Johannesburg, for his researches on parasitic protozoa, soil protozoa, and heredity. The medal is being presented to Prof. Fantham at the Grahamstown meeting of the Association on July 6.

THE Museums Association will hold its annual conference this year at Plymouth on July 6–11. All meetings of the Association will be held in the Abbey Hall. July 6 will be spent in committee meetings, and the president, Sir Henry Miers, will deliver his presidential address on July 7. The president's address will probably include some indication of a proposed survey of all the museums in the British Empire, to be financed by the Carnegie Corporation of New York. Among the papers to be read are: "A Suggested System of Museum Registration", by Mr. K. de B. Codrington, and "Paper for Museum Labels", by Dr. L. J. Spencer, on July 8; "Taxonomy in the

Museum", by Dr. W. T. Calman, "Present-Day Problems of Provincial Museums", by Mr. H. J. M. Maltby, and "The Preservation of Marine Life, Wet or Dry Specimens", by Dr. E. J. Allen, on July 9; and "Museum Problems in Canada", by Prof. J. H. Illiffe, "A Simple Way to test Museum Value", by Dr. Hay Murray, and "Why do we use Plate-Glass in Museums?" by Mr. Frank Loney, on July 10. All communications concerning the Conference should be addressed to the local honorary secretary, Mr. A. J. Caddie, Museum and Art Gallery and Cottonian Collection, Plymouth.

THE Report of Map Publication and Office Work of the Survey of India for 1929-1930 (Calcutta, 1s. 9d.) is chiefly useful for the detailed index sheets of published maps of India and adjacent countries. Good progress is being made with all the maps. The 'million' map is now practically complete for India, Burma, and adjacent countries. The modern '1-inch' map is making progress, and the modern '¼-inch' covers considerable areas in the most important parts of India. Additions have also been made to several other series.

THE last issue of the League of Nations *Quarterly Bulletin of Information on the Work of International Organisations*, No. 2, vol. 3, April 1931, contains brief reports of some three dozen conferences held and also a list of more than sixty forthcoming conferences to be held during the present year. It is desired to make this register as complete as possible. Information about coming scientific conferences of international importance would be particularly welcome and may be addressed to the Section of International Bureaux, League of Nations, Geneva.

MESSRS. Wheldon and Wesley, Ltd., 2 Arthur Street, W.C.2, have just circulated an important catalogue (New Series, 25) of second-hand works (more than 2000 in number) on entomology and arachnology, including the collection of pamphlets formed by the late W. F. Kirby. The list is obtainable upon application.

A USEFUL catalogue (No. 458) of about 900 second-hand books on philosophy, including many from the library of the late W. E. Johnson, Sidgwick lecturer in moral science in the University of Cambridge, has just been received from Messrs. Bowes and Bowes of Cambridge. Copies can be had from the publishers upon application.

MESSRS. H. K. Lewis and Co., Ltd., have just issued a supplement (1928-1930) to the catalogue of their Medical and Scientific Circulating Library which should be of service not only to users of the library, but also to others who may wish for particulars of books relating to science in its various branches. The supplement is arranged alphabetically, but a classified list of subjects included, with the names of the respective authors, is given at the end. The price to subscribers is 1s. net., to others 2s. net.

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APPLICATIONS are invited for the following appointments, on or before the dates mentioned:—An assistant quantity surveyor on the staff of the Miners' Welfare Committee of the Mines Department—The Under-Secretary for Mines, Establishment Branch, Mines Department, Dean Stanley Street, S.W.1 (July 8). A secretary of the Institution of Sanitary Engineers—The Chairman of Council of the Institution of Sanitary Engineers, 120-122 Victoria Street, S.W.1 (July 8). A visiting teacher of science capable of teaching physics and chemistry, hygiene, and some biology in the junior day school of the Smithfield Institute—The Education Officer (T.1), County Hall, S.E.1 (July 10). An assistant in the natural history division, National Museum, Dublin—The Secretary, Civil Service Commission, 45 Upper O'Connell Street, Dublin, C.8 (July 10). A lecturer in mining at the Sunderland Technical College—The Chief Education Officer, Education Office, 15 John Street, Sunderland (July 11). A full-time lecturer in charge of the electrical engineering department of the Chesterfield Technical College—The Principal, Technical College, Chesterfield (July 11). An assistant master at the Bolton Municipal Technical College, to teach mainly science subjects in the junior technical school and engineering departments of the College—The Director of Education, Education Offices, Nelson Square, Bolton (July 11). A librarian of University College, Nottingham—The Registrar, University College, Nottingham (July 13). A principal of the Neath Mining and Technical Institute—The Director of Education, County Hall, Cardiff (July 13). An assistant lecturer in physics at University College, Nottingham—The Registrar, University College, Nottingham (July 13). An assistant organising lecturer at University College, Nottingham, under the Miners' Welfare Adult Education Joint Committee—H. L. Featherstone, 14 Shakespeare Street, Nottingham (July 14). A woman senior demonstrator in pathology at the London (Royal Free Hospital) School of Medicine for Women and Royal Free Hospital—The Warden and Secretary, 8 Hunter Street, W.C.1, or the Secretary, Royal Free Hospital, W.C.1 (July 15). A lecturer in zoology at Birkbeck College—The Secretary, Birkbeck College, Fetter Lane, E.C.4 (July 15). A principal of the Harris Institute, Preston—Alderman H. Astley Bell, Harris Institute, Corporation Street, Preston (July 31). A keeper of archæology in the Liverpool Public Museums—The Town Clerk, Municipal Buildings, Dale Street, Liverpool (Aug. 1). An assistant town planner under the Government of Northern Rhodesia—The Crown Agents for the Colonies, 4 Millbank, S.W.1, quoting M/2748. A lecturer-in-charge of the building department of the Norwich Technical College—The Principal, Technical College, Norwich. Teachers of engineering drawing and mechanical engineering at the East Ham Technical College—The Secretary, Education Office, Town Hall, East Ham, E.6. A teacher of engineering at the Leyton Technical College—The Clerk to the Governors, 280 High Road, Leyton, E.10. A Principal of University College, Leicester—The Registrar, University College, Leicester.