

THE death is announced from America of Dr. Joseph Clark Hoppin, the well-known classical archaeologist. Dr. Hoppin was a graduate of Harvard University, and at one time was professor of classical archaeology in Bryn Mawr College, Philadelphia, but relinquished this post to devote himself to research. He was a student at the American School of Archaeology at Athens in 1892-3, and took part in the excavations carried on in the Argive Heræum between the years 1892 and 1895. When the work of excavation came to an end, he took charge of the Department of Ceramics and was responsible for the examination and classification of the large quantity of pottery in the Museum at Athens which had been obtained from the Heræum site. His "Handbook of Attic Red-Figured Vases," a standard authority, appeared a few years ago, and his book on "Greek Black Figured Vases" appeared only at the end of last year. He had devoted himself for many years to the formation of a collection of classical antiquities, and it is said that his collection was perhaps the most complete of any in private hands in the United States. The value of his work had been recognised in Great Britain by election to honorary membership of the Society for the Promotion of Hellenic Studies, an honour which he greatly appreciated. According to a sympathetic notice by one of his former colleagues in Athens, which appeared in the *Times* of February 4, he had projected further excavations, at his own expense, shortly before his illness, in the Argive Heræum.

THE *Chemiker Zeitung* records in a recent issue the life and work of Dr. Richard Escales, who died on September 9 at Munich. Dr. Escales' name will be remembered chiefly in connexion with his work on explosives. He

was born on July 8, 1863, at Zweibrücken, where his father owned a textile factory. After studying at Würzburg, Munich, Erlangen, and Zurich, he graduated in 1886, and for a while was engaged in his father's business. Somewhat later he returned to Munich in order to undertake the study of explosives in the laboratory of Adolph von Baeyer, and in 1898 he discovered *ammonal*, a high explosive containing aluminium powder, which played a prominent part in the War. He sold the patent rights of this discovery for an inconsiderable sum in Vienna. In 1902 he founded an experimental station for explosives at Munich, where during the War he acted as director of the department of "Minenwerfer." He compiled a seven-volume standard work on explosives and was the founder and publisher of the *Zeitschrift für das gesamte Schiess- und Sprengstoffwesen*.

WE regret to announce the following deaths:

Dr. J. Cleland, F.R.S., from 1877 until 1909 professor of anatomy in the University of Glasgow, and afterwards emeritus professor, on March 5, aged eighty-nine.

Dr. Willet G. Miller, provincial geologist of Ontario, known for his work on the pre-Cambrian and economic geology of Ontario, on February 5, aged fifty-eight.

Dr. J. A. Ormerod, registrar since 1909 of the Royal College of Physicians, and Harveian Orator in 1908 and Lumleian Lecturer in 1914 of the College, on March 5, aged seventy-six.

Sir William Peck, Director of the Edinburgh City Observatory, Calton Hill, on March 7, aged sixty-three.

Dr. J. Ward, professor of mental philosophy and logic in the University of Cambridge since 1897, on March 4, aged eighty-two.

Current Topics and Events.

MUCH satisfaction is felt in scientific circles that the Prince of Wales has consented to occupy the presidential chair of the British Association for the meeting to be held at Oxford next year, either from July 28 to August 4, or from August 4 to August 11. At a meeting of the General Committee of the Association on Friday, March 6, Sir Ernest Rutherford, who was in the chair, reported that the Prince had intimated his willingness to accept the presidency; and he was, therefore, nominated by the Council to the Committee and elected unanimously. The Prince Consort was president of the Association for the meeting held at Aberdeen in 1859, but since then no other member of the Royal Family has filled that office. British science is greatly honoured by the consent of the Prince of Wales to act as president, and his knowledge of the resources and needs of the Empire is so extensive that whatever he may say in his address at the Oxford meeting will have wide influence upon both science and the community.

A PAPER by Sir Arthur Schuster, "On the Life Statistics of Fellows of the Royal Society," has just appeared in the Proceedings, and at last week's meeting of the Society the author himself gave an interesting summary of conclusions. Previously, the subject had been studied by General Strachey, who,

in 1892, communicated a paper based on a statistical examination of the average age of the 15 fellows annually elected, their probable duration of life, relationship to an eventual maximum strength of fellowship, and other considerations. The point whether or not a small increase in the number of annual elections is required, in view of the larger scientific output of the country, has been discussed in recent years, but without bringing any change of procedure. The number of fellows of the Society at the beginning of 1848, when new statutes came in force, was 768. In consequence of the restriction in the number annually elected, this total was diminished by more than a hundred in the first ten years; by 1912 the maximum had become 455. Since then the numbers show a steady decline. On January 1, 1923, there were 439 fellows. As regards age at election, Sir Arthur remarks that it is difficult to gauge the effect of the War, but probably it was appreciable. His impression is that the younger men were kept back in their scientific work even when they were not actually in the field; while some of maturer age were substantially assisted in obtaining the fellowship by their War work. The youngest man elected into the Society since 1847 was John Lubbock (afterwards Lord Avebury), who entered at the age of twenty-four,

BROADCASTING in Great Britain on a regular and commercial basis started at Marconi House in London in November 1922. The aerial work of the new 2 LO station has been erected on the roof of the Selfridge building in Oxford Street. There are two towers of the lattice type, the top of each being about 250 feet above the roadway. The towers are entirely self-supporting, no guy wires being used. The aerial is of the two-wire type, the distance between the wires being 15 feet, the wires being connected to an insulator on the roof of the apparatus room by two large cage connectors. The aeriels are made of nineteen strands of No. 16 bronze wire and are very heavy. Strings of eight shackle insulators serve to spread and anchor the leading-in cages. The machines installed in the power-house are direct coupled motor generator sets running from the supply mains. Eighteen kilowatts is taken from the mains. Some of this power is needed for the master oscillators which maintain the frequency of the carrier wave perfectly constant. A certain amount of power also is required for the filaments of the many oscillating, modulating and rectifying valves, as well as for the ordinary losses in the machines. The amount of power radiated into space is about three kilowatts, and this is the rating of the station. The greatly increased power and the greater size and height of the aerial will more than double the range of the present 2 LO broadcasting station. The studio, which has always been entirely distinct from the transmitting apparatus, will remain at the B.B.C. headquarters at Savoy Hill, W.C.2. As before, it will be connected with the transmitter by special underground cables. The new station will shortly be in regular operation, for the experiments already made have proved extremely satisfactory. It will be one of the finest broadcasting stations in the world.

SIR ARTHUR KEITH, in his discourse at the Royal Institution on Friday evening, March 6, concerning the rate of man's evolution, described the difficulties in the study of this subject due to the varying stature of men and women among all races of mankind, entailing the measurement of many thousand individuals. In searching the ancient burial-places of England, it is found that the people buried in ancient tombs differed in height in the same manner as at the present time. It may be said that there has been no great change in the stature of the inhabitants of these islands since the close of the Ice Age. The mean average of the modern Englishman of 5 feet 6 inches may be taken as the pivot on which the scales of stature have been balanced for thousands of years. This was shown from a study of fifty ancient skulls from English graves carried out in 1914-15. The evidence obtained from certain fossil remains discovered at Galley Hill in 1888 points to an antiquity of man of no less than 100,000 years. The facts which have been accumulating for some years past on the continent of Europe confirm this conclusion. The discovery of fossil remains made in South Rhodesia in 1921 has disclosed a more primitive human type, but its age has not yet been definitely fixed. By studying the facts which

arise from the discoveries made in various parts of the world, anthropologists are able to form an opinion as to the rate at which man has come by the present characters of his body and brain; and the evidence which has been accumulating leads them to the conclusion that the evolution of man has been more rapid than many have hitherto believed.

THE China Indemnity (Application) Bill passed its second reading in the House of Commons on March 3 without a division, and was referred to a standing committee of the House. The debate was interesting and informing, and as such contrasted favourably with the second reading of the Bill brought in last May by the late administration. Mr. McNeill's accurate and well-marshalled knowledge of the facts, and his conciliatory attitude, made an admirable impression not only on the opposition, who objected to the changes in personnel made in the contemplated advisory committee, the places of Mr. Bertrand Russell and Mr. Lowes Dickinson being taken by Prof. Southill and a business representative, but also on the members of his own party, who contended that the best expenditure of the fund would be on railways. Mr. MacDonald in a convincing speech made short work of this contention, while admitting the value of railways in developing national resources. He urged that, in this case, the insufficiency of the sums available; the troubles, complexities, and negotiations which would be involved even in capitalising the fund for such purpose; and the psychological effect on the Chinese of so using the fund rendered such a project impracticable.

IN Mr. McNeill's opinion the phrase in the China Indemnity (Application) Bill "educational or other," which describes the purposes of the fund, should be interpreted to mean that the object must be something in the nature of education, or, at all events, it must be something which is not absolutely divergent from the main idea. Since, however, notwithstanding this opinion, divergent purposes were pressed on the House, this point, with Mr. McNeill's concurrence, will be decided in the standing committee. It may be hoped, therefore, that Mr. Somerville's amendment, "educational, medical or other similar purposes," will be accepted. These words evidently meet the views which Mr. McNeill expressed, and their adoption would relieve the advisory committee of an invidious task. As to the constitution of this committee, a present member of it characterised it as "derisory" from a Chinese point of view. Though its object is educational, the Board of Education has no concern whatever in its membership; no medical man has a seat; and, if trade interests are not to be pressed, the inclusion of a Board of Trade official seems undesirable. Besides that, the other members are so occupied with public or private work that the time and attention they would be able to devote to this important work must be limited, and, considering the opportunity of national service which the fund offers, may be exiguous.

THE report of the executive committee of the Empire Cotton Growing Corporation, submitted at the

meeting of the administrative council held on February 25, has underlying it a tone of expectation of a great increase in cotton production in the tropical and subtropical colonies. Indeed, many signs point in this direction, and it is a matter of vital importance to the British Empire to grow as much of its own cotton as possible. Mr. Milligan, formerly Inspector-General of Agriculture in India, and now in charge of the work of the Corporation in South Africa, gives an interesting account of this. There will be fifteen men working at cotton problems this year, as against four in 1924. Rhodesia, where the greatest possible interest is being taken in cotton, has so rapidly expanded its area under this crop that difficulties are arising in respect to ginnery accommodation. Nigeria is about to start Government farms for the supply of seed. The Corporation has appointed a cotton breeder to work in the Sudan. Nyasaland has obtained a reduction in railway rates upon maize, which will form the necessary secondary crop for a rotation; and so on. The evidence of the great interest now being taken in Empire cotton, and of the expansion of its cultivation, is growing more marked every day.

COL. PURVES, the Engineer-in-Chief of the Post Office, read an interesting paper to the Institution of Electrical Engineers on the "Post Office and Automatic Telephony" on March 5. A general history was given of the development of automatic exchanges. The system actually adopted by the Post Office is a development of the Strowger system, now called the "Director System." This system was devised by the Automatic Telephone Manufacturing Co. of Chicago, and, on the whole, it was considered better than the other systems. The electric power required for an exchange of 10,000 lines is provided by two 50-volt batteries each of 10,000 ampere-hour capacity. The requisite current at peak load will exceed 2500 amperes. When a subscriber has finished dialling his instrument he hears immediately the "ringing tone," which tells him that the required subscriber is being rung up, or the "busy tone" which tells him that he is engaged. The extreme complexity of modern automatic circuits and equipment is illustrated by the fact that a single automatic switching unit of 10,000 lines comprises no less than 5 million contacts. Any one subscriber in an exchange of this size can obtain connexion with any other subscriber by 240,000 different linkages. To reach all the subscribers in his unit he has 2400 million different linkages at his disposal. When we consider the large number of other exchanges he can get in contact with, the number of linkages is enormously increased. Graduated courses of instruction are now being given to the skilled workmen who will maintain the exchanges in working order. The inspectors and engineers who will have to be responsible for the mechanism and the efficiency of the service are also being specially trained.

COL. PURVES, in his paper referred to above, points out that the modern automatic calling dial is a remarkably simple piece of apparatus considering the

immense complexity of the machine which it controls. This simplicity is the result of a long period of evolution since some one in the Automatic Electric Co. first had the happy thought of making a rotating disc with finger holes for the purpose of sending the trains of impulses required for the Strowger automatic system. The master patent secured a monopoly for this device from 1898 to 1912. During this time a great amount of ingenuity was expended in inventing other signalling devices which would not infringe this patent. During all this period an old and forgotten telegraph device, invented by Cooke and Wheatstone not later than 1839, anticipated in all essential respects the terms of the master patent. It was found during a clearing up of an old storeroom of the General Post Office in 1913, when the master patent had just expired. It anticipated all the explicit claims of this patent. It is curious that a patent controlling such large commercial interests, and considered unassailable for fourteen years, should have been so completely anticipated by the earliest pioneers of telegraphy.

D. N. PRIANISHNIKOV, the eminent Russian professor of agriculture, whose thirtieth anniversary of his scientific work is being celebrated in Moscow during this month, was born in 1865 in Kiachta, S.E. Siberia. After completing his course at the school at Irkutsk he entered the University of Moscow, but soon left it to take up studies in the Agricultural Academy at Petrovskoje, near Moscow; in 1888 he passed his final examinations, and was offered a post-graduate scholarship. In 1891 he was sent abroad to study the agricultural chemistry and physiology of plants, mainly in Germany, with Prof. Schulze. In 1891 he was appointed lecturer, and in 1895 professor of agriculture in the Agricultural Academy of Petrovskoje, a post which he still holds, so that through his laboratories passed many hundreds of Russian agricultural specialists. In his scientific work Prof. Prianishnikov approaches the views and ideas of Bussengo, while his thorough training in the physiology of plants by one of the ablest botanists of the last century, K. Timirjazev, and in chemistry by G. Gustavson, enabled him to elucidate a long series of most complicated problems, mainly concerning fertilisers and manures and their physiological effects. His dissertation for the doctor's degree, on the dissimilation of proteins in connexion with breathing and assimilation of carbon dioxide, which appeared in 1899, has been followed by numerous other works, about 200 in number, mainly in Russian and German agricultural periodicals. Two of his books, a course of agriculture, and a handbook on fertilisers and manures, are amongst the best of their kind, the latter having been translated into Polish and German. The influence of Prof. Prianishnikov's works and of his teaching on the progress, especially of research work, in Russian agriculture cannot be overestimated. Hundreds of his former pupils, with whom he always keeps in touch, have been and still are working in different parts of Russia, developing his ideas and accumulating scientific data. For an agricultural country like Russia, scientific workers

of Prof. Prianishnikov's type must be (if not always are) considered amongst the principal factors in the progress of the country.

IN the official report, issued by the Textile Institute, of Proceedings of the first Empire Textile Conference (held at the British Empire Exhibition at Wembley in Whit-week 1924) accounts are given by the Directors of the Cotton, Woollen, and Linen Research Associations of the present position of scientific research in textiles and of the advantages that must necessarily follow from persistent application of scientific method to problems of the trade. Numerous examples are given of spinning, weaving, and finishing problems which are now being investigated by the research associations, and attention is directed to the unlimited field for further research on matters the solution of which will be of the utmost national and Imperial importance from the points of view of the grower of the raw material, the manufacturer and the user. In addition, the first part of the report contains sixteen papers dealing with exceedingly wide interests, including Empire supplies and consumption of wool and cotton, the possibilities of the British silk trade and the statistics of the textile export trade. It is pointed out that the rapid increase in wool consumption during the last twenty years has been accompanied by an enormous decline in wool production, and an appeal is made to our great overseas Dominions to rectify this lack of proportion. The vast economic importance of the cotton trade is referred to, and it is emphasised that as this is the largest manufacturing industry in Great Britain, the importance of increased Empire production of raw cotton, upon which the stability of this great industry must ultimately depend, is a matter of grave concern if the trade is to retain its pre-eminent position in the world's markets. The decline of the British silk trade in the last fifty years has been considerable, although the Empire demand is sufficient to warrant a four-fold expansion of British trade in this material. The second part of the report contains eleven scientific papers on the physical and physico-chemical problems relating to textile fibres, and a discussion thereon (held in conjunction with the Faraday Society), an account of which appeared in *NATURE* for July 5, 1924, p. 27.

THE Faraday Medal of the Institution of Electrical Engineers will be presented to Sir J. J. Thomson at the ordinary meeting of the Institution to be held on Thursday, March 19, at 6 P.M. The presentation will precede the reading of Mr. S. Evershed's paper on "Permanent Magnets in Theory and Practice."

THE Society of Glass Technology has established a small Research Fund for the purpose of promoting research in subjects related to glass technology. Grants from this fund will be made to assist in conducting specified items of research approved by the Council of the Society. Applications should be addressed to the Secretary, Society of Glass Technology, Darnall Road, Sheffield.

THE annual prize of the American Association for the Advancement of Science for the 1924 meeting at

Washington has been divided and awarded as two prizes of five hundred dollars each, to Dr. L. R. Cleveland, of the Johns Hopkins School of Hygiene and Public Health, for his work on the physiology of termites and their parasites, and to Dr. Edwin P. Hubble, of the Mount Wilson Solar Observatory, for his work on the nebulae.

THE HON. W. G. A. ORMSBY-GORE, M.P., Under-Secretary of State for the Colonies; Sir Frank Heath, Secretary of the Department of Scientific and Industrial Research; and Sir Richard Gregory will be the principal guests at the annual dinner of the National Union of Scientific Workers to be held at the Adelaide Gallery (Gatti's Restaurant), King William Street, Charing Cross, on Thursday, March 19. The president of the Union, Prof. G. H. Hardy, will be in the chair.

THE Fison Memorial Lectures, which have been established in memory of the late Dr. A. H. Fison, lecturer in physics at Guy's Hospital Medical School, and Secretary of the Gilchrist Educational Trust, will be inaugurated on Thursday, May 7, when the first lecture will be given by Sir J. J. Thomson, Master of Trinity College, Cambridge, who will take as his subject, "The Structure of Light." The Right Hon. The Earl of Balfour will preside at the meeting.

THE Huxley Medal of the Royal Anthropological Institute has been awarded to Sir William Ridgeway, Disney professor of archæology in the University of Cambridge, in recognition of his services to anthropological science, particularly in connexion with the study of the archæology of the Mediterranean area. Sir William Ridgeway, who was president of the Royal Anthropological Institute in 1908 and 1909, will deliver the Huxley Memorial Lecture in 1926. The Huxley Memorial Lecture for 1925 will be delivered by Sir Arthur J. Evans in November next.

LIEUT.-GENERAL SIR WILLIAM B. LEISHMAN, Director-General, Army Medical Service, Hon. Physician to the King; Sir Richard Lodge, professor of history, University of Edinburgh; and Mr. William Rothenstein, Principal of the Royal College of Art, South Kensington, have been elected members of the Athenæum under the provisions of Rule II. of the Club, which empowers the annual election by the Committee of a certain number of persons of distinguished eminence in science, literature, the arts, or for public service.

THE spring conversazione of the staff of the Natural History Museum was held in the Board Room on March 4, and attracted the usual large attendance of members and visitors. On this occasion most of the exhibits were selected to illustrate desert conditions and the effect of desiccation. They included fulgurites (lightning tubes), desert roses, and etched pebbles (the cause of the peculiar markings of which still remains an unsolved problem); Coleoptera, Diptera, and Lepidoptera, illustrating the development of desert colour; hares, rats, mongooses, and birds, showing the effect of desert environment; lizards illustrating modifications in the scales, eyes,

and feet; and desert plants showing the development of spines and prickly leaves as a protection against thirsty and hungry animals. Among the exhibits was a remarkable specimen of *Helix desotoorum*, the common desert snail of Egypt, which was fixed on a tablet in the Museum in March 1846, and was found in March 1850 to be still alive after four years in a Museum case without food or moisture. The snail became torpid in October 1851, and was found to be dead in May 1852. Among the general exhibits may be mentioned specimens illustrating a recent study of the occurrence of *Gongylonema* in Italy by Dr. L. W. Sambon and Dr. H. A. Baylis.

A JUNIOR scientific assistant is required by the Admiralty for research work. Candidates must possess an honours degree in physics or its equivalent, have a good knowledge of general physics, with some experience in research. Applications should be sent to the Secretary of the Admiralty (C.E.), Whitehall, S.W.1.

THE Experimental Department of H.M. Signal School, Portsmouth, invites application for a junior scientific assistantship from holders of an honours degree in physics or its equivalent. Applications should be sent, with particulars of qualifications and with testimonials, to the Secretary of the Admiralty (C.E.), Whitehall, S.W.1, not later than April 7.

WE have received from the Castner-Kellner Alkali Co., Ltd., a pamphlet on sodium peroxide. This compound was discovered by Gay Lussac and Thenard about 1810, but it was not until 1891 that it was manufactured on a large scale. The properties are described and the method of using the substance for bleaching purposes is set out in some detail. Useful tables of acid densities, etc., are also included in the booklet.

AN interesting tour in the Dordogne and Vézère Valleys during the Easter vacation (April 9-25) has been organised by Prof. Patrick Geddes. It will include visits to the principal prehistoric sites and caves in the neighbourhood of Les Eyzies under the guidance of Dr. Peyrony, the curator of the Musée Archéologique, who will also conduct the party around, and demonstrate, the collections in the museum. Dr. Peyrony has recently published an account of the investigations carried out by himself in company with L'Abbé Breuil and Dr. Capitan at Les Combarelles, and this opportunity of visiting the classical sites of palæolithic art and culture under his guidance should appeal to all who are interested in prehistoric archaeology. The second part of the tour will be devoted to a series of excursions for the purpose of the study of the geography and history of the most attractive portions of the Dordogne Valley, Domme being taken as the centre. These excursions will be conducted by M. Paul Réclus. Particulars may be obtained from Miss M. M. Barker, 152 Abbey House, Victoria, S.W.1.

THE Women's Electrical Association has been formed with the immediate object of promoting the wider use of electricity in the service of women, and

a large and representative council has been formed to guide its activities. Lectures and demonstrations of the applications of electricity are in hand, and the study of electrical applications in universities, colleges, and schools, particularly in relation to domestic subjects, is to be promoted. It is also proposed to institute a junior section which will be more especially concerned with girls' schools and colleges. Particulars can be obtained from the director of the Association, Miss C. Haslett, 26 George Street, Hanover Square, W.1.

WE have received a copy of the first issue of a new Italian monthly review entitled *Leonardo*, devoted to Italian culture in all its varied aspects, and published in Rome under the auspices of the Leonardo Trust and the editorship of Giuseppe Prezzolini. The review is illustrated, and is to be conducted apart from political influence and from the influence either of any literary or philosophical school, or of any firm of publishers. Its aims are not merely bibliographical, but comprise the study of cultural activities of all forms: scholastic, journalistic, theatrical, and even cinematographical. This first number contains, among other contributions, articles on the second International Book Fair, to be opened in Florence at the end of April, on the work of several Italian authors, and on British literature relating to Italian matters, together with a number of reviews of Italian books dealing with art, philosophy, hygiene, the literature of Italy and other countries, linguistics, medicine, pedagogy, geography, religion, social and political sciences, history, and the theatre. It is well produced, and should command a wide circulation, both in Italy and elsewhere.

THE Cambridge University Press announces for early publication vol. i. of a new edition of "Principia Mathematica," by Prof. A. N. Whitehead and the Hon. Bertrand Russell. There will be three volumes in all.

AN interesting catalogue (No. 467) of some 1300 second-hand books on anthropology, folk-lore, archaeology, and sociology has just been issued by Mr. F. Edwards, 83 High Street, Marylebone, W.1. Copies can be obtained upon application.

WE learn that Messrs. J. W. Atha and Co., who are the distributors for Messrs. Carl Zeiss, Jena, have now transferred their business to larger and better equipped premises at Winsley House, Wells Street, Oxford Street, London, W.1.

THE Schlomann-Oldenbourg Illustrated Technical Dictionaries in English, French, German, Italian, Russian, and Spanish, are familiar works. A British office has now been opened with Mr. H. I. Lewenz as editor and manager, and he will be responsible for the English terms and phrases contained in the dictionaries. Volumes are to be issued shortly on weaving and woven materials, on mining, agricultural machinery, chemistry, gas engineering, etc. The work is issued and stocked by Messrs. Lewenz and Wilkinson, Ltd., 25 Victoria Street, Westminster, S.W.1.