

Obituary.

DR. W. M. W. HAFFKINE.

THE death of Waldemar Haffkine on Oct. 26 last will recall an era in bacteriology of which few of the active participants still survive.

The discovery in 1880 by Pasteur, that fowl cholera can be prevented by the inoculation of living attenuated cultures, and his success with this disease, as also with swine erysipelas, anthrax, and hydrophobia, seemed to open up a field of endless possibilities. One of the early workers to transfer this activity to human beings was Haffkine, who was enabled to go to India and inoculate vast numbers of people against Asiatic cholera and bubonic plague. Following the Pasteurian tradition, he first used living cultures, as Ferran y Clua (1852-1929) had done before him in Spain. The results were not satisfactory; and later, Haffkine turned to the use of killed cultures, the value of which had previously been shown (1884-1886) by D. E. Salmon and Theobald Smith in America in the case of prophylactic inoculation against hog cholera.

Waldemar Mordecai Wolff Haffkine was born in Odessa on Mar. 16 (3), 1860, the son of Aaron Haffkine. He received a classical education at Berdiansk (South Russia) and studied science in the University of Odessa (1879-83). He afterwards worked at the Zoological Museum in Odessa (1883-88) and then came west as assistant professor of physiology in the Medical School of Geneva. Ultimately, he made his way to Paris in the wake of Metchnikoff, met Pasteur, and was appointed (1889) *préparateur* at the Pasteur Institute, which had been inaugurated the previous year. He remained in this post until 1893, when he went to India full of ideas of stamping out cholera by prophylactic inoculation.

Here he found a great field for his efforts and in the midst of his work he turned aside to combat another scourge—bubonic plague—which was beginning to get a firm hold of Bombay. Under his directions vast quantities of the protective vaccines were made and inoculated on a wholesale scale. In the course of his labours he received great publicity and fame, partly on account of the enthusiasm of his personality and partly on account of the uncritical attitude towards some of his results.

Haffkine was regarded as a kind of second Jenner, but when a study of his plague results was made by the English Plague Commission in India, the report was, on the whole, adverse to his claims. None the less, he was regarded as a bacteriological wizard. He retired from the India service in 1915 and returned to Europe, where he lived for a time in Paris and afterwards at Boulogne-sur-Seine. He wrote relatively little of a scientific character in bacteriology.

W. B.

WE regret to announce the following deaths:

Dr. J. V. Elsdon, joint editor of the *Colliery Guardian* and author or part author of several well-known geological works, and treasurer from 1916 until 1921 of the Geological Society of London, aged seventy-four years.

Mr. C. J. B. Macdonald, an honorary life governor of the Royal Agricultural Society of England and editor since 1927 of the Society's *Journal*, on Nov. 10, aged sixty-six years.

Prof. E. R. Matthews, chief drainage engineer to H.M. Office of Works, and formerly Chadwick professor of municipal engineering in the University of London, on Nov. 6, aged fifty-seven years.

News and Views.

His Majesty the King has approved of the following awards this year by the president and council of the Royal Society in respect of the two Royal Medals: Royal Medal to Prof. O. W. Richardson, for his work on thermionics and spectroscopy; Royal Medal to Prof. J. E. Marr, for his pioneer work in the accurate zoning of the palaeozoic rocks. The following awards of medals have also been made by the president and council: Copley Medal to Sir William Bragg, for his distinguished contributions to crystallography and radioactivity; Rumford Medal to Prof. Peter Debye, of Leipzig, for his work relating to specific heats and X-ray spectroscopy; Davy Medal to Prof. R. Robinson, for his work on the constitution and synthesis of natural products, and for his contributions to the theory of organic reactions; Darwin Medal to Prof. Johannes Schmidt, of Copenhagen, for his work on extended oceanographical expeditions, and for his genetic studies in animals and plants; Hughes Medal to Sir Venkata Raman, of Calcutta, for his studies on the abnormal scattering of light.

THE following is a list of those recommended by the president and council for election to the council of the Royal Society at the anniversary meeting on Dec. 1:

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President: Sir F. Gowland Hopkins; *Treasurer*: Sir Henry Lyons; *Secretaries*: Dr. H. H. Dale and Dr. F. E. Smith; *Foreign Secretary*: Lord Rayleigh; *Other Members of Council*: Prof. E. V. Appleton, Prof. G. Barger, Prof. A. E. Boycott, Prof. E. P. Cathcart, Sir Alfred Ewing, Prof. E. S. Goodrich, Prof. G. H. Hardy, Sir Harold Hartley, Sir Thomas Lewis, Dr. W. H. Mills, Prof. E. A. Milne, Dr. A. B. Rendle, Prof. R. V. Southwell, Prof. G. I. Taylor, Prof. D. M. S. Watson, and Prof. W. W. Watts.

SIR ARTHUR KEITH was elected Rector of the University of Aberdeen on Nov. 8 in succession to the late Lord Birkenhead. Sir Arthur, who was a non-political candidate, was opposed by Col. John Buchan, M.P. (Unionist), and obtained a majority of votes in each of the 'nations', Mar, Buchan, Angus, and Moray, the total numbers being 310 as against 231. Although not unprecedented, the election of a non-political candidate is rare. Sir Arthur was formerly a student of Aberdeen and as one of the most distinguished of its *alumni* now living had a strong claim on the suffrages of the members of his University. His studies in the comparative morphology of the Simiidæ—in particular of the anthropoids—and

of early types of man have served to support as well as to elucidate the Darwinian hypothesis of the descent of man. His gift of lucid and graceful exposition has won him an unrivalled place as a public lecturer, as is testified by the fact that he has held all the lectureships open to members of the medical profession. By his more popular writings and lectures he has done much to stimulate the interest of the general public in the problems of anthropological science. In his official capacity as Curator and then Director of the Royal College of Surgeons, he has indeed deserved well of the members of the medical profession. Among the many positions of honour to which he has been called, it will suffice to mention the presidential chair of the Anatomical Society, of the Royal Anthropological Institute, and of the British Association at its Leeds meeting in 1927. We offer Sir Arthur our congratulations on this latest and perhaps most welcome of his honours.

THE pamphlet "How to Tackle Unemployment", published last week by the Liberal party, contains no strikingly new ideas. The policy advocated by its authors, Mr. Lloyd George, Lord Lothian, and Mr. Seebohm Rowntree, differs little from that outlined in "Labour and the Nation", which has been the inspiration of the Labour party for the past three years. Neither the analysis of the causes of the present world-depression and the decline of British basic industries, nor the suggested remedies for unemployment, bears the stamp of originality. It is indeed unlikely that the Labour Government's Economic Advisory Council, among the members of which are Sir Daniel Hall, Mr. J. M. Keynes, and Mr. G. D. H. Cole, had not already reached much the same conclusions as to causes and submitted similar remedial schemes in even more detail than those put forward in the pamphlet. Nevertheless, the task of industrial reconstruction will undoubtedly be made easier by the publication of the Liberal leaders' selective synthesis, not the least noteworthy part of which is the recognition given to the part which scientific and technical knowledge should play in the future development of the British Empire.

THE Liberal pamphlet contrasts the position of the scientific and technical experts in Germany with their position in Great Britain. In Germany the Credit Banks are equipped with expert staffs "capable of investigating both the efficiency of going concerns and the soundness of proposed industrial ventures", and in consequence even small concerns have often been enabled to raise necessary capital from the public. In Great Britain the "bankers are masters but have so far not felt it proper to accept responsibility for enforcing reorganisation or greater efficiency" in industry, largely due to the fact that they have not appropriate experts on their staffs or scientific or technical experts on their boards of directors. The pamphlet also deals with the important part which science has to play in the development of those parts of the world where the standard of living is very low, and particularly of the British Colonial Empire. The proper investment of capital would enable agriculture,

the basic industry of our colonies, to be developed scientifically and inevitably raise the standards of life of the backward races; this, over a period of time, would play an extremely important part in the solution of the unemployment problem. Both at home and overseas "enterprise . . . will increasingly take the form of the exploitation of new scientific development and new inventions". It is not suggested that it is the business of governments to be responsible for invention, but it is asserted that governments should assist in every way to create the conditions whereby the pursuit of industrial research and the discovering and wise application of invention are encouraged to the utmost.

IN a pamphlet entitled "The Agricultural Crisis and the Way Out" (Messrs. Jarrold and Sons, Ltd., Norwich, 3d.), Dr. Cloudesley Brereton points out that agriculture is still the basic industry of Great Britain and still employs the largest number of hands, though a million acres have gone out of cultivation and 100,000 agriculturists have left the land. Since 1922, the great majority of farmers have been losing money year by year and there has been a progressive drop in the prices of wheat, barley, and oats. Prices, indeed, for most kinds of agricultural products are unnaturally low, according to Dr. Brereton, partly because farmers have not organised their marketing and partly because of the unrestricted competition of foreign produce. Traders in meat, bread, and vegetables have become highly organised as a result of the impetus given by War-time organisation for the distribution of food, and they have been able to force a lower price on the producer and to raise prices against the consumer. They have ceased to interest themselves in helping the farmer to get rid of any surplus during a glut, preferring to buy a more or less fixed amount, regardless of the supply available, and to retail it at more or less fixed prices according to the season. Dr. Brereton looks for a solution of the agricultural problem in the development of some form of organised marketing, though he holds that until this is developed nothing but a guaranteed price for wheat, with a duty on foreign malting barley and the prevention of 'dumping', can tide the farmer over the interval. The cost to the Government would gradually decrease as marketing schemes were developed. The German plan of compelling all millers to grind a fixed quota of home-grown wheat might also be adopted.

A USEFUL pamphlet by P. Good describing the organisation of the electrical industry in Great Britain has just been published by the Institution of Electrical Engineers. About sixty organisations are described, beginning with the Institution of Electrical Engineers and finishing with the British National Committee of the World Power Conference. The Electrical Research Association (E.R.A.) co-operates with those responsible for the laboratories in the universities, technical colleges, and schools throughout the country. This forms a valuable link between the colleges and industry. The value of the work done by this Association is known to be far in

excess of the expenditure incurred. The research carried out on overhead transmission lines at a comparatively trifling cost has been shown to represent a saving of 10 per cent on the three million pounds per annum expended on constructing these lines. The Electricity Commissioners Department also, which has been entrusted with supervising the supply of electricity throughout Great Britain, has done an immense amount of work. The country has been divided into eight areas, and very complete statistics regarding the number and nature of the undertakings in these districts have been collected. The Commissioners have paved the way for the centralisation of the supply, which is at present proceeding rapidly. The Institute of Transport is linked up with the electrical industry owing to the many important developments in the application of industry to transport which have recently taken place. It is a little disappointing to read that the total route mileage electrified in England is only 615.8, of which 307.7 miles, or nearly half, has been done by the Southern Railway.

"HEREDITY and Predestination" was the subject of the Lloyd Roberts Lecture delivered by Dr. Barnes, the Bishop of Birmingham, at Manchester Royal Infirmary on Nov. 7. It is an effort to mould upon some of the biological theories of the day an interpretation of the relationship of man to God, or, perhaps more accurately, it may be said to be an attempt to support certain widely held beliefs by particular appeal to the notion of genes as the repositories of unit characters. The general progress of the inorganic and organic worlds, culminating in civilised man, leads Dr. Barnes to a belief in the purpose and intelligent will of God. He does not believe in the inheritance of acquired characters, nor will he risk being called a vitalist, but he is a thorough-going believer in the gene. "Tennyson's words, 'Man is man and master of his fate', must be altered to 'The genes are genes and masters of man's fate'." Now changes in the genes appear to be the raw material of evolution, and through them the creative process works; that is to say, if ethical theism be accepted, that in modifications of the genes the activity of God is expressed. Yet modifications of the genes, expressed in visible mutations, seem to be devoid of any ethical character whatever, so that, as Dr. Barnes sees the matter, good and evil arise with equal frequency in the variations associated with heredity, but the Divinely guided creative process of which we are products is active through the environment. The determinism which is implied in inheritance does not necessarily mean that we have no freedom of choice.

DR. BARNES goes on to say that "the notion that evil is due to a fall, to some act of spiritual rebellion against God, must be abandoned", since we have learned that evil and good are equally likely to arise at every stage of the evolutionary process. The 'evil and good' of his argument are simply adjustment or maladjustment to environment: the good are the survivors, the evil the individuals smothered by circumstances. Man has so modified circumstances that now ill-adjusted individuals of humanity are con-

strained to survive, and this survival of 'evil' is one of the great problems of social progress. We are entirely with Dr. Barnes in his plea for further research into the inheritance of feeble-mindedness, but we cannot see that his appeal to the gene has furthered the problems with which he deals. If genes are realities, it is impossible to say that they are the ultimate sources of variation; it is equally difficult to believe that the action of environment is less deterministic than the variation of the ultimate units of life; but—and this lies at the foundation of the argument—there is no certainty in the statement that mutations are equally good and evil, or in the notion that they are causeless in the sense of being entirely fortuitous.

"SCIENCE and Modern Industry" was the subject taken by Sir William Pope for his Norman Lockyer lecture to the British Science Guild on Nov. 13. Modern man, he said in the course of the lecture, is to no appreciable degree the intellectual superior of his predecessor who lived in the far fringe of historic time. The invention of expressive and flexible languages, the existence of great literatures, the execution of gems of art, and the development of moral philosophy thousands of years ago, when compared with man's powers to-day, suggest that some forms of intellectual expression have long since been worked out to the utmost limit of the capacity of the human intelligence. In the study of the natural sciences, on the other hand, there finds expression a new faculty; the application of deductive reasoning to experimental observations carried out in accordance with a connected scheme and leading to an understanding of the ways of inanimate Nature is a new phase in man's intellectual history. The scientific age has provided us with a liberal supply of creature comforts, with more freedom from toil and more leisure than could have been dreamt of a century ago; moreover, it has seen the foundation of great industries. Modern industry, consisting in the application of science to industry, can serve national or international needs with economy and efficiency only when legislative or other control is exerted scientifically. Sir William Pope developed his argument by reference to the rise, decline, re-birth, and protected development of the coal-tar dyestuff industry in Great Britain, explaining the principal factors controlling the situation and the form of legislative assistance which has been accorded to the industry during the past ten years. The building up of a virile dyestuff industry in Great Britain has necessarily been accompanied by advantage to every branch of chemical industry and science, so that uncertainty whether the Government proposes or not to renew the relevant Act causes widespread embarrassment.

So much information concerning the manufacture and consumption of dyestuffs in Great Britain is available as to afford the practical certainty that the issue of national interest could be decided on questions of fact by a judicial body. "Scientifically-minded people," said Sir William Pope, "whether academic or industrial, have no convictions; they frame their conclusions and actions on the facts." Some of the great

industries of Great Britain, particularly the agricultural industry, are archaic in their methods and outlook; it is significant that in Germany agriculture is by far the largest domestic consumer of chemical products, whilst in England far too little advantage is being taken of artificial manures. Turning to the consideration of preparation for an industrial career, Sir William insisted on the profound distinction between education and instruction. The attainment of a mastery over general principles is a slow process, because it involves education, and the learning of experimental methods calls for long and laborious laboratory training, whilst theoretical organic chemistry, for example, offers an easy task to the youthful trained memory. It is common to find that the young man's handwriting and spelling are execrable, his knowledge of leading facts and ideas imperfect, and his knowledge of foreign languages quite inadequate, while he is stuffed with facts relating to highly specialised branches of science. Sir William Pope did not advocate a return to the classical and mathematical education of former days, but he asked that the schools should provide an education in the broad principles of the natural sciences and methods, supplemented by liberal and simple courses of practical work in the laboratory. Business men who had received a broad scientific education would find themselves capable of assessing at their true value many of the fantastic proposals which are continually being laid before financiers.

THE discovery of an unusual type of implement in the Swanscombe gravel pit at Northfleet, Kent, is announced in the *Times* of Nov. 6. Its interest lies in the fact that this type is unlike anything previously known in England or on the Continent, with the exception of certain implements found at Clacton-on-Sea by Mr. Hazzledine Warren, and others somewhat similar, also found by Mr. Warren, at Stoke Newington. The Abbé Breuil has therefore suggested the name 'Clactonian' for the new industry. The discovery was made by Mr. R. H. Chandler in the bottom gravels of the pit ten feet below the middle gravels in which St. Acheul hand-axes were found in excavations in 1913, of which characteristic examples are now in the British Museum. In these previous excavations some flakes only were found in the bottom gravels. The predominant tool in the present discovery is a species of chopper, of which the cutting edge has been produced by flaking a flint nodule with alternate strokes from right and left. Some of the flints are striated. The tools are associated with a warm fauna, the straight-tusked elephant, rhinoceros, and deer. Hence it is suggested that the striated tools may have been made before the Mindel glaciation, while those without striation and associated with the warm fauna may have belonged to the Mindel-Riss interglaciation. They would thus come between Chellean and Acheulean and might be classified as Early Acheulean.

THE October issue of *Man* is a special number devoted to India, embodying some of the results of the work of the Indian Research Committee of the Royal Anthropological Institute. For some time a

special committee has been engaged in the investigation of Indian beads. It was with the assistance of this committee that Miss Caton-Thompson was enabled to arrive at a dating for the Rhodesian ruins at Zimbabwe. The number opens with a brief account of the work of the committee by Prof. J. L. Myres, president of the Royal Anthropological Institute, which is followed by a contribution by Mr. H. C. Beck, "Notes on Sundry Asiatic Beads," illustrated by two plates, of which one is a beautiful reproduction in colours of some of the more striking and important types. Mr Beck deals with beads from burial sites—megalithic, cairn, and urn burials—in India, the Malay Peninsula, and Sarawak. Some of the beads are of considerable antiquity, and Mr. Beck by comparative study traces them to their probable origin. Some of the beads show affinities with Crete, while others are of Roman origin. A series of articles by Mr. L. A. Cammiade describes the excavation of urn burial sites in Southern India, and particularly the Madras Presidency, from which some of the beads described by Mr. Beck were derived. The area of these urn burial sites was sometimes considerable, running to as much as a quarter of an acre. The urns were of various types, and inside the large urns were smaller urns, in one case as many as twenty-two in number. There were no signs of cremation.

THE custom of urn burial revealed by the excavations described by Mr. Cammiade is extremely interesting. In certain cases it is highly artificial, as Mr. Cammiade points out. While some of the large urns contained a body entire, in others—those in which the smaller urns were contained—the small bones, the phalanges and carpals, had been placed in small urns, the skull and some of the other bones were found among the contents of the urn, and the long bones were leaning against the internal sides of the urn. The culture of the cairn and urn burials of Southern India is discussed by Mr. K. de B. Codrington. He is of the opinion that they belong to a single culture complex in Southern India, presenting affinities with Northern India which it is not yet possible to work out. The date approaches somewhere about the borders of the historic period; it may be about 600 A.D. The burial customs appear to link up with modern practice; but the interesting feature is that they appear to be the final stage of the burial rite and to be communal, the bodies having been reserved until the time of interment came. The rich were interred entire; but of the poor, some of the bones only were interred symbolically.

DURING the naval review off Portland on Nov. 1, three battleships, the *Warspite*, *Barham*, and *Malaya*, were engaged from 3 P.M. to 3.20 P.M. in concentration firing from 15-inch guns. According to the *Times* correspondent on board the *Nelson*, which was little more than a mile from the firing ships, the reports did not seem unduly loud. They were heard, however, according to letters in recent issues of that paper, at considerable distances from Portland, the farthest place being Towcester in Northamptonshire (130

miles) and the nearest Littlehampton in Sussex (83 miles)—not unusual distances when a silent zone is developed. When plotted on a map, the 25 places are seen to lie within an oval area 113 miles long from north-west to south-east and 56 miles wide, the centre of the area being about one hundred miles north-east of Portland.

THE British Photographic Research Association has gone into voluntary liquidation; this decision has been reached in full accord between the Department of Scientific and Industrial Research and the manufacturer members of the Association. Two main factors have necessitated this decision. The first is that important changes have taken place in the organisation of the industry itself; manufacturing interests have been consolidated and as a result the number of separate firms interested in the work of the Association has been considerably reduced. The second factor is a very marked increase in the research work carried out in the laboratories of the manufacturing firms themselves—an increase which has, to a large extent, been the outcome of the work of the Association. This widening of the outlook of the industry with regard to research is one of the results which it was hoped the Association would achieve, and the development has been much fostered by the policy of the Director of the Association, Dr. T. Slater Price, in keeping the scientific staffs of the manufacturing firms in close touch with the research work carried out in the laboratories of the Association, and also with the latest scientific developments likely to have direct application to problems of the industry.

DR. PHILIP EGLETON delivered an address before the Royal Society of Edinburgh on Nov. 3, on recent work in the biochemistry of muscle. In studying the muscular engine, two chemical systems—which may prove to be quite distinct—have to be sought. One is responsible for the energy of contraction, an anaerobic set of processes, and the other is concerned with the 'recharging' phase, oxidative recovery. The view that the formation of lactic acid from carbohydrate is the core of the former system, and its partial oxidation is the essence of the latter, has had to be seriously modified as a result of several recently reported facts, notably the discovery by Lundsgaard that in certain circumstances work may be done anaerobically by a muscle without the formation of any lactic acid. The newer additions to our knowledge do not weaken the hypothesis that the oxidation of lactic acid provides the energy for recuperation, but they necessitate a fresh search for the chemical contractile mechanism. It has been suggested by Meyerhof that the breakdown of phosphagen (which Lundsgaard observed even in the muscles incapable of lactic acid production) is a reaction capable of supplying the necessary energy for this phase. There are difficulties in the way of this suggestion, but the only alternative at present is to place the responsibility on some reaction, or set of reactions, as yet undiscovered.

THE presidential address of Sir George Humphreys to the members of the Institution of Civil Engineers

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on Nov. 4 was appropriately devoted to a review of the activities of the London County Council during the period of twenty-eight years in which Sir George has been associated with that body, for the later portion as its Chief Engineer and Administrator of Housing. The population of Greater London has increased from 6,600,000 in 1901 to nearly 8,000,000 at the present day, and the problems presented by its growth and redistribution have been of an extremely interesting character. Sir George reviewed the various spheres of administration and development, including the drainage area of 180 square miles, with its main outfalls at Barking and Crossness, pointing out that within the area surrounding the County (117 square miles) to a radial distance of 25 miles from Charing Cross, there are so many as two hundred separate sewage works, the effluents from which find their way into the Thames. The problem of making comprehensive provision for these and additional areas within the catchment basin is now engaging the attention of the Ministry of Health. As regards water supply, the greater part of the water for the 574 square miles served by the Metropolitan Water Board is drawn from the Thames and the remainder from the Lee and from wells. The Board has to-day available storage reservoirs for 19,657 million gallons, and despite some restriction of use in 1929, it has maintained a supply of about 100,000 million gallons of water per annum for a population of about 7½ millions. The Thames bridges, tunnels, and river protection works were alluded to, and the various public services, including transport, briefly surveyed. The address concluded with a reference to housing accommodation for the working classes, and stated that the contributions of the London County Council and the borough councils, since the War, had amounted to about 40,000 and 11,000 dwellings respectively, the former constituting, in a number of cases, small townships, such as the Becontree estate at Dagenham with 25,000 houses and the St. Helier estate near Morden with 10,000.

IN the recent presidential address to the Society for Psychical Research, delivered by Dr. Walter Prince, of Boston, U.S.A., which is printed in the Society's *Proceedings* for October, the speaker laid stress upon the unsatisfactory methods generally employed for the investigation of the so-called physical phenomena of spiritualism, and outlined a number of conditions which it would be desirable to demand. He compared the nature of the evidence as regards these alleged physical phenomena with that of certain of the mental phenomena, such as scrying and clairvoyance. With respect to these, he maintained that so far from explaining away the phenomena, psychical researchers have brought some of them far on the way to factual establishment. Dr. Prince considers that telepathy is proved, and attempts to dispose of many of the mental phenomena have been met with swift rebuttal. Continuing, Dr. Prince referred to a few cases which seem difficult to explain normally, and in conclusion stated that what is needed is more observation until finally the meaning and significance of the phenomena will become clear.

FROM *Věstník*, the publication of the Museum of Czechoslovakia, we learn that at an auspicious inauguration ceremony on May 4, an Agrarian Museum in Bratislava was thrown open to the people. The building of the museum has taken four years, and now ten rooms are devoted to general exhibits and four to a historical section. The aim of the museum is to inculcate in the peasantry a new interest in their own country, in the development of its agriculture, and in the struggles of their ancestors; and through these to promote further progress in agriculture. The care with which the museum has been planned, both as regards the buildings and the collections which they are to house, speaks well for the foresight of its organisers, and it is not surprising to learn that the Slovak peasants welcome the new cultural institution, which gives a feeling of unity and solidity to their industry. The opening of the museum was celebrated as a holiday by the Slovak peasantry and the whole agricultural population in Czechoslovakia.

"IN these times when our traditional human pairings are being so widely criticised and so boldly relaxed, there is a biological warning—Beware of Reversions." In the course of an article in the *Quarterly Review* for October, Sir J. Arthur Thomson recalls, in the light of recent researches, the trend of the evolution of sex in the animal kingdom. His excellent summary of the many-sided progression of sex structures and sex behaviour leads to conclusions which bear upon human affairs, for he is convinced that man, when willing to use science as his torch, has much to gain from a survey of the sub-human world of life. A wide survey of the evolution of sex throughout the animal kingdom shows the gradual enhancement of sex attraction by the addition of the psychological to the physiological, and by the addition of finer sympathies and synergies to the sensory attraction. Where a prolonged courtship is subtle, as Julian Huxley has shown it to be with the great crested grebe, it forges psychical bonds which last and keep the two birds loyal partners long after the sex-fondness has passed into abeyance. The main lesson of the evolution of sex, Sir Arthur concludes, is that fondness should rise into love, and that the earth-covered roots should feed a stem that bears the flowers of the spirit and the seeds of an evolving race.

AT the ordinary meeting of the Institution of Electrical Engineers to be held at 6 P.M. on Thursday, Nov. 20, an oil painting of Ampère will be presented to the Institution on behalf of Mr. E. Gareke. The portrait is by Mr. Edgard Maxence, Member of the Institute of France.

It is announced in *Science* that the Abbé Henri Breuil, of the Institut de Paléontologie Humaine, Paris; Sir Arthur Keith, of the Royal College of Surgeons, London, and Prof. G. Elliot Smith, of University College, London, have been elected corresponding members of the Field Museum of Natural History, in recognition of services rendered to the museum.

SCIENCE Service announces that Admiral Watson Taylor, U.S.N., retired, has been awarded the John Fritz Medal for his outstanding achievement in marine architecture, particularly in relation to hull design, as Chief Constructor of the United States Navy during the War. The award is made by the four American societies of civil, mining and metallurgical, mechanical, and electrical engineers.

THE third Liversidge lecture of the Chemical Society, which was to have been delivered by Prof. H. B. Dixon, will be given at 5.30 P.M. on Dec. 11 by Prof. W. A. Bone, at the Imperial College of Science and Technology, South Kensington. Prof. Bone will take as his subject, "Fifty Years' Experimental Research upon the Influence of Steam on the Combustion of Carbonic Oxide (1880-1930)".

THE annual meeting of the Institution of Naval Architects will open on Wednesday, Mar. 25. At the invitation of the Association Technique Maritime et Aeronautique, the summer meeting will be held in Paris early in July 1931. The International Exhibition at Vincennes (near Paris) will add to the interest of the meeting, and it is proposed to visit one of the shipbuilding centres in France.

THE following officers for the session 1930-31 of the Philosophical Society, University of Durham, have been elected: *President*: The Hon. Sir Charles A. Parsons; *Hon. Secretary*: Mr. W. M. Madgin, Armstrong College, Newcastle-upon-Tyne; *Hon. Treasurer*: Mr. J. W. Bullerwell, Armstrong College, Newcastle-upon-Tyne; *Editor of Proceedings*: Prof. G. W. Todd; *Librarian*: Dr. F. Bradshaw.

AT a meeting of the Geological Society of London on Nov. 5, Prof. P. Lemoine, Paris, and Prof. G. A. F. Molengraaff, Delft, were elected foreign members of the Society; and Prof. R. S. Bassler, Washington (D.C.); Prof. O. Mügge, Göttingen; Dr. D. I. Mushketov, Leningrad; Madame M. Pavlov, Moscow; Prof. P. D. Quensel, Stockholm; and Prof. E. Stensiö, Stockholm, were elected foreign correspondents of the Society.

THE following appointments have recently been made by the Secretary of State for the Colonies: Mr. W. G. Higgins, to be agricultural field officer, Federated Malay States. Mr. C. M. Maggs, to be horticultural assistant, Federated Malay States. Mr. V. Liversage, to be agricultural economist, Kenya. Mr. F. B. Notley, to be assistant entomologist, Kenya. Mr. G. M. Roddan, to be provincial superintendent of agriculture, Sierra Leone. Mr. E. Harrison, deputy director of agriculture, Kenya, to be director of agriculture, Tanganyika Territory. Mr. G. W. Lock, to be district agricultural officer, Tanganyika Territory. Mr. R. P. Davidson and Mr. A. J. Kerr, to be agricultural officers, Uganda. Mr. G. Griffith, to be assistant agricultural chemist, Uganda. Mr. W. Small, mycologist, Ceylon, to be director of agriculture, Nyasaland. Mr. E. P. Hodgkin, to be entomologist (Medical Service), Kenya. Mr. M. E. Dommen, to be assistant conservator of forests, Cyprus.

In the column of "Historic Natural Events" in NATURE of Nov. 8, p. 744, it is stated that Tycho Brahe discovered Nova Cassiopeiæ on Nov. 11, 1572, from Uraniborg. The observation was made, however, at the castle of Herritzvad, near Knudstrup, where Tycho Brahe's maternal uncle, Steno Belle, had permitted him to instal a laboratory. The first stone of the observatory of Uraniborg was laid on Aug. 8, 1576.

THE *Guide to Current Official Statistics* is a very useful annual publication of H.M. Stationery Office (price 1s.). The volume for 1929 has now been issued. There are two main divisions of the guide. The larger part is occupied by a detailed subject index which gives the numbers of the relevant publications. In the second part these are serially listed with titles and contents. This arrangement makes it easy to discover if there is an official publication on any subject.

THE annual report for the year ended Mar. 31 last of the Executive Council of the National Institute for the Blind, 224-6-8 Great Portland Street, London, W.1, has recently been issued. The report gives an account of the work of the Institute, with a general description of its activities. Interesting information is given respecting the reproduction of literature in Braille and in Moon types, with several illustrations. Help is given by voluntary workers in the production of single Braille volumes: for example, a particular text-book for a blind student. It is only by means of an assured income that the splendid work of the Institute can be maintained and extended, and an appeal is made for continuous support, for which purpose the annual subscription is most valuable.

THE eleventh Annual Report of the Ministry of Health, 1929-1930, has recently been issued (London: H.M. Stationery Office. 4s. 6d. net). The report relates to the year ended on Mar. 31, 1930, and the

subjects dealt with come under the main heads of public health, local government and local finance, poor law, national health insurance, and contributory pensions. The report is in the main a record of the more important business transacted by the Ministry during the year, and does not cover matters of routine or detail. In the section dealing with sale of foods and drugs, attention is directed to the considerable contamination by tin that may occur in cheeses wrapped in tin-foil. As in previous years, the Annual Report of the Chief Medical Officer of the Ministry is published separately.

APPLICATIONS are invited for the following appointments, on or before the dates mentioned:—A research student at the Institute of Pathology and Research, St. Mary's Hospital—The Secretary, Institute of Pathology and Research, St. Mary's Hospital, Paddington, W.2 (Nov. 17). A lecturer in dermatology in the University of Liverpool—The Registrar, The University, Liverpool (Nov. 19). An assistant at the Institute of Metals, for technical abstracting—The Secretary, Institute of Metals, 36 Victoria Street, S.W.1 (Nov. 20). An assistant curator in the Royal Botanic Gardens, Kew, in charge of the Herbaceous and Alpine Department—The Secretary, Ministry of Agriculture and Fisheries, 10 Whitehall Place, S.W.1 (Nov. 24). A principal of the Stranmillis Training College, Belfast—The Secretary, Committee for the Training of Teachers, Ministry of Education, Parliament Buildings, Belfast (Dec. 1). A director of the Fuel Research Institute of the Union of South Africa—The Secretary, Office of the High Commissioner for the Union of South Africa, 73 Strand, W.C.2 (Dec. 15). An advisory entomologist in the University of Reading, under the scheme of the Ministry of Agriculture and Fisheries for the provision of technical advice to farmers—The Registrar, The University, Reading.

Our Astronomical Column.

Total Solar Eclipse of Oct. 21.—The *Daily Science News Bulletin* of Oct. 24, issued by Science Service, Washington, D.C., gives an account of the results obtained by the American party on the island of Niuafo'ou in the solar eclipse of Oct. 21. There had been rain shortly before totality, but it cleared in time, leaving only a very slight haze, which did not seriously interfere with the coronal photographs: these are stated to be of marvellous beauty; they were taken with the 63-ft. tower telescope and the 65-ft. horizontal one. The corona was of a type intermediate between maximum and minimum; there were streamers both to east and west, and a coronal dome shaped "like a gigantic strawberry" was a prominent feature. Prof. Mitchell secured excellent spectrograms with two concave gratings, extending from $\lambda 3200$ to $\lambda 7800$. They show more than thirty hydrogen lines and eight coronal lines. Structure can be traced in the image given by a coronal line in the green; a coronal disturbance is shown that appears to be connected with a prominence. The New Zealand party also secured successful spectrograms with a prismatic camera, but they are on a smaller scale than the American ones.

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The Leonid Meteors of 1930.—Mr. W. F. Denning writes: "The shower of November meteors becomes due at the middle of the present month, though no brilliant display is to be anticipated. The group of meteors which originated the abundant exhibition of Nov. 13, 1866, was disturbed by the gravitational influence of the planet Jupiter and apparently drawn outside the earth's orbit, so that in 1899 or 1900 no striking returns were observed. In 1901, however, a somewhat plentiful outburst of meteors was noticed in America, while in 1903 the shower was witnessed in England. The numbers counted, however, fell far below those recorded in 1833 or 1866, and were quite of secondary importance. The part of the stream which may return this year will form the region in advance of the main clusters near the cometary nucleus and should be attentively observed, for it is important to ascertain whether or not the meteors are now more richly distributed along the orbit than in former years. This year the moon will be full nine days before the shower should recur with the greatest activity, and will rise on Nov. 15 at 0.34 A.M. and at 1.59 A.M. on Nov. 16. Observers who will watch the firmament either before or after these times will be certain to see a few fine Leonids, and possibly obtain some valuable data."