

and have an alternative one worked out within a few hours.

After the War, Dr. Dye succeeded Mr. F. E. Smith, now Sir Frank Smith, as head of the Electrical Standards Division, and established his reputation for highly accurate work in the measurements he carried out on the primary electrical standards and units, including standards of inductance and capacity. He devised a new method for accurate measurement of the vertical component of the earth's magnetic field, and the apparatus he constructed for this purpose is now the principal instrument in regular use for absolute measurements at the Abinger Magnetic Observatory. More recently he had devoted himself to the development of new methods of time measurement for precise standardisation of radio frequency, and had already achieved results of a very high order, using a specially controlled tuning-fork and a quartz oscillator. He was a member of the Radio Research Board and of the British National Committee of the Union Radio-Scientifique Internationale, of which he was secretary; and at the Congresses at Washington, Brussels, and, last year, at Copenhagen, he acted as chairman of the Commission on Radio Standards. He was elected a fellow of the Royal Society in 1928, and was a member of the Council of the Physical Society.

SIR ARTHUR DUCKHAM, G.B.E., K.C.B.

THE death of Sir Arthur Duckham, which occurred with tragic suddenness on Feb. 14, is a great loss to the nation. He stood in the forefront of British industries and, at the age of fifty-two years, in the fullness of his powers, seemed destined to play a great part in the campaign that lies before our industrial leaders. Trained as an engineer under the enlightened regime of Sir George Livesey at the South Metropolitan Gas Company's works, Arthur Duckham evinced at an early age the inventive skill, enterprise, and energy which bespoke a great future. In conjunction with Col. H. W. Woodall at Bournemouth, he brought to success the well-known Woodall-Duckham process for the continuous carbonisation of coal in vertical retorts. From this achievement he passed to other work connected with furnace construction and carbonisation, and built up the great organisation

of Woodall-Duckham enterprises, of which he was the leading spirit.

Duckham's labours extended widely beyond this commercial enterprise. Early in the War he was brought into action in connexion with munitions supply and, by his exceptional gifts, soon attained a leading position in this exacting and vital work. His services were recognised by conferment of K.C.B. in 1917. He was a member of the Sankey Coal Commission in 1919 and, in an individual report, favoured State ownership of mineral rights but not of mines. In 1928 he spent seven months in Australia as chief of a small commission of English industrialists appointed to advise on trade opportunities with that country. Further recognition of his public services was marked by the conferment of G.B.E. in 1929.

Duckham had a full appreciation of the part to be played by science in modern industry. Without extended formal scientific training, he had the scientific instinct and outlook. In his own business he had an elaborate and highly efficient scientific intelligence service which secured all necessary aid for his various enterprises. He was ever ready to plead the cause of science, and he had occupied the presidential chair of the Institution of Chemical Engineers and the Society of British Gas Industries. He was president-designate of the Federation of British Industries for 1932.

Sir Arthur Duckham was endowed with qualities of character and temperament which, in all walks of life, made an instant appeal and secured for him a quite exceptional measure of regard. His loss will be felt as a personal bereavement throughout a very large circle.

WE regret to announce the following deaths:

Sir Frederick William Andrewes, F.R.S., emeritus professor of pathology in the University of London, a pioneer of bacteriology in Great Britain, on Feb. 24, aged seventy-two years.

Dr. George Claridge Druce, F.R.S., curator of the Fielding Herbarium in the University of Oxford, on Feb. 29, aged eighty-one years.

General G. Ferrié, formerly president of the Committee on Longitudes of the International Astronomical Union, on Feb. 16, aged sixty-three years.

News and Views

Prof. A. W. Williamson and Japanese Development

MUCH attention is being given at present to affairs in the Far East, in connexion with which it is of interest to recall the pioneer efforts of nearly seventy years ago of Prof. Alexander W. Williamson, F.R.S., the distinguished chemist, to enable Japanese youth of high rank to obtain a knowledge of European methods in education, the arts and sciences, commerce, and manufactures. In association with him was a small band of men, inspired by his enthusiasm and example. Williamson was born at Wandsworth in 1824, and he died in 1904. Educated mostly abroad, he was a

pupil of Gmelin, at Heidelberg, and Liebig, at Giessen. In 1849 he was elected professor of practical chemistry at University College, London, with which the chair of general chemistry was later (1855) combined; he remained in the service of the College for thirty-nine years. Williamson was foreign secretary of the Royal Society from 1873 until 1890, and a Royal medallist of that body. On two occasions he was chosen president of the Chemical Society.

THE opening for Williamson's scheme came in 1863, when he received, through a London merchant having trading connexions in the Far East, an offer to send

him five Japanese youths to be housed and started in educational courses akin to English ideas and outlook. Thereupon Williamson undertook the necessary supervision, and he discharged his responsibilities thoroughly. It is sufficient to mention the after careers of these students of English methods to show this. One, who became the Marquis Ito, framed, in course of time, his country's constitution; a second, afterwards Count Inouye, aroused and developed commerce; a third, Viscount Inouye, inaugurated the Japanese railway system; a fourth, Viscount Yamao, became the first Minister of Public Works, and initiated a scheme of technological training, assisted by workers drawn from British sources. In all this early planning Williamson had a share, through his disinterested activity. The first contingent of youths was followed by a party of sixteen from Tokyo, sent by the Prince of Satsuma, also placed under Williamson's watchful eye. Among these were Mori, Yoshima, and Sameshima. Finally, just over half a century ago (1880), we find Williamson engaged in a research with Sakurai, the Japanese chemist, and others of his nationality.

Imported Scientific Films and Museum Specimens

By the Finance Act of 1925, a customs duty of 33½ per cent was placed upon films imported into Great Britain. During the debate on the Finance Act of 1928, Capt. Ian Fraser, M.P., moved an amendment exempting from duty "cinematograph films . . . certified by the Royal Society of London for promoting Natural Knowledge to be solely an illustration of scientific investigation for exhibition before members of a recognised scientific body and imported only for the purpose of such exhibition free of charge". This amendment was accepted, and proved to be a small but much appreciated boon to scientific workers and others, who obviously benefit by the free international exchange of films recording their investigations. The new Import Duties Bill did not include such films in its list of imports exempt from duty, and Capt. Fraser put down an amendment the object of which was to retain the privilege. This amendment has now been taken over by the Chancellor of the Exchequer as an official amendment, and was incorporated in the Bill on report stage on Feb. 25. In a letter in the *Times* of Feb. 27, Sir Henry Wellcome refers to the position of material for exhibition in museums. A clause has been added to the Import Duties Bill exempting such material when it is more than a hundred years old, but this will not cover natural history, ethnographical, and other specimens required by research workers. The Museums Association, in a letter from its honorary secretary, Mr. D. W. Herdman, has endorsed Sir Henry Wellcome's statement, adding that its views have already been communicated to the Chancellor of the Exchequer. Museum material is clearly on the same footing as printed books, and we hope that it will be possible similarly to exempt it from import duty.

Prof. C. V. Boys's Apparatus at the Science Museum

PROF. C. V. BOYS has recently presented to the Science Museum, South Kensington, some very interest-

ing examples of his early experimental work. His use of quartz is shown in one case, where the bow which he employed in 1889 in the preparation of quartz fibres by the well-known 'bow-and-arrow' method is exhibited, together with examples of arrows used with it. Several of the fibres made by him in this way are exhibited, as well as the first quartz bulb ever blown. Soon after his successful production of quartz fibres, Prof. Boys utilised this material in an attempt to determine the constant of gravitation with a modified form of the Cavendish apparatus. He showed that increase of sensitivity could be accompanied by a considerable reduction in size, thus greatly reducing convection troubles. A small experimental apparatus made in 1889 served to demonstrate that consistent and accurate results could be obtained in this way, and as a result of the experience thus gained, a somewhat larger apparatus was made and used between 1889 and 1894 for the determination of the gravitational constant. Both instruments are now exhibited together, and form a permanent record of Boys's classical determination of this most important constant. In addition to the above, the following pieces of apparatus due to Prof. Boys are also on exhibition: the original experimental radio-micrometer, a portion of a new form of difference engine, and two electrometers, both dating from about 1891.

Scientific Research at the British Museum

By the establishment in April 1931 of the Research Laboratory at the British Museum as a permanent institution under the control of the Trustees, the experimental stage of the undertaking, which had been continued by the Treasury and the Department of Scientific and Industrial Research for no less than eleven years, was brought to a successful conclusion. In a paper read before the Royal Society of Arts on Feb. 24, the Director of Scientific Research, Dr. Alexander Scott, indicated the nature and variety of the work carried out in his laboratory and described some of the results which have been obtained. In discovering the best means of restoring and preserving museum objects, it is essential first to learn all that is possible regarding the previous history of each specimen; neglect of this essential has, in the past, led to many failures and has earned scientific men an evil reputation. The establishment of the research department on a permanent basis, however, is clear proof that the custodians of the nation's treasures have confidence in the methods which have been devised with so much care and applied with so much success.

Restoration and Preservation in Museums

DR. SCOTT referred to the disintegration of stone objects arising from the crystallisation of salts contained in the porous material, and to the extraction of the salts by means of wet paper pulp; salts are also removed from fragile brick tablets by first applying a celluloid coating, and then diffusing the salts into distilled water. Stains on old manuscripts can frequently be removed by the application of pyridine, and brown marks on water-colour pictures by the application of a solution of chloramine-*T*. The treatment of 'bronze

disease', a condition due to the presence of chlorine, by soaking in sodium sesquicarbonate solution followed by copious washing will often remove all the chlorine without attacking the patina, whilst in aggravated cases, soaking in citric acid solution or the use of an electrolytic process may be necessary. Fourteenth century glass from Wells Cathedral was found to be coated with material derived from the combined action of an impalpable powder arising from the limestone floor and sulphuric acid provided by the combustion of gas. Other problems the successful solutions of which were described by Dr. Scott included the corrosion of a silver chalice, the unrolling of a manuscript on fragile leather, and the cleaning of marble busts.

Chemical and Photochemical Reactivity

ON Dec. 17, 1931, the Chemical Society devoted an ordinary scientific meeting to a discussion on the critical increment of homogeneous reactions. It was immediately apparent that the material then presented and the observations then offered should be put on permanent record in an accessible form, and this has since been done by the publication of a separate pamphlet (1s. 6d.) bearing the imprint of the Society and following the form of its *Journal*. The discussion was opened by Mr. C. N. Hinshelwood, whose subject was the energy of activation of chemical reactions. The magnitude and nature of activation energy, catalytic phenomena, and the contributions of quantum mechanics to the problem were among the matters considered. Mr. E. J. Bowen followed with a paper on photochemistry and chemical reactivity, referring to photosensitisation, the phenomenon of 'predissociation' discovered by Henri, and the direct reaction of excited and normal molecules. Prof. A. J. Allmand's contribution dealt with the variation of quantum efficiency with wave-length in photochemical reactions; five different types of effect are distinguished, and their incidence in affecting the quantum yield was examined. Prof. E. K. Rideal discussed transition reactions, while Dr. F. G. Soper gave an account of researches on the effect of solvents on reaction velocity. Dr. T. Iredale communicated a short contribution dealing with the heat of activation of hydrogen iodide. In the spontaneous discussion which followed, Dr. R. G. W. Norrish, Mr. C. R. Bailey, Prof. Allmand, Mr. H. W. Thompson, and Mr. Hinshelwood took part. Their observations, together with the full text of the principal contributions, are to be found in the publication already mentioned.

Preservation of the Fauna of the Empire

IN a short address at the general meeting of the Society for the Preservation of the Fauna of the Empire, the chairman, Sir Peter Chalmers Mitchell, made a strong appeal for the consolidation of the position in regard to animal reserves within the Empire. At present the continued existence of faunal reserves depends upon the goodwill of individual governments or individual parliaments. The discovery of mineral deposits, the demand for timber, and other possible eventualities, may lead to particular

reserves being thrown open to traffic or trade, with disastrous effects to the animal population, which cannot be herded into new areas at the will of man. What is needed for the permanent protection of those faunas, which are rapidly becoming relict faunas, is the raising of the status of their native territory in certain cases from temporary reserves to permanent national parks. The Society, which since its foundation has worked so strenuously on behalf of the Empire's threatened animals, has often appealed, with reasoned arguments founded upon the reports of its own observers, to the Colonial Office, but so far without success. The alteration would involve no extra expenditure; ultimately, indeed, the national parks by proper administration would bring in a certain amount of revenue; the surplus earned by the Game Department of Kenya, under strictly regulated conditions, was £15,022 in 1930. At present their creation would cost nothing, and would mean permanent security for the animals and plants in the reserved regions.

WE strongly commend the campaign which the Society has launched for the spread of news relating to wild life. A short time ago we read in a northern newspaper an account of life in the forests of British Guiana; and the article was to be followed in the course of a few days by a lecture. It is excellent propaganda, the educational value of which must be appreciated by everyone interested in Nature and its preservation. The Society has in all 867 members; it deserves and ought to have many more. May we suggest that somewhere, say on the blank cover of the *Journal*, from the December number of which we have quoted, a note should appear of the conditions of membership and of the amount of the annual subscription.

Frequency Range of Broadcast Receivers

IN opening a discussion on the selectivity of broadcast receivers at the Institution of Electrical Engineers on Feb. 24, Prof. C. L. Fortescue said that as the apparatus tested becomes more and more sensitive, components of higher and higher frequencies are found in it. The female voice is known to have components having frequencies so high as 10,000, and footfalls, hand-clapping, and the operation of typewriters are observed to have components of frequencies approaching 16,000. In broadcast transmitters provision is not usually made for such a wide range, and nearly every receiver has a much more limited range. A lower frequency limit of 50 and an upper limit of 5000 are usually considered to give good results. In the production of talking films, the audio-frequency output is, perhaps, subjected to the most careful scrutiny. In this case there is a noticeable tendency to try to get a full response up to a frequency of 10,000.

THE problem of getting uniformity of response over the whole audible range is more difficult. A highly trained observer detects, at particular frequencies, increases or diminutions in the loudness which the ordinary person does not notice. 'Musical' people are sometimes even the least critical of all in this

respect, owing to their peculiar power of imagining all the missing parts, just as in an ordinary telephone conversation the listener himself occasionally provides as much as fifty per cent of the intelligibility. It was mentioned that there is a good deal of evidence to show that many receivers accept high-frequency energy over a far wider range of frequency than is necessary. The result is that they suffer from serious interference, as the waves of transmissions on neighbouring frequencies and the programmes they carry are also heard. It would obviously be better to limit the high-frequency range. The question of whether the average purchaser of a broadcast receiver can be entrusted to get the best results from a sharply tuned high-frequency circuit is one that can only be settled by statistics.

Fisheries of the Thames Estuary

IN a note in *NATURE* of May 11, 1927, attention was directed to the unpublished reports of Dr. James Murie on the Thames Estuary fisheries. Before his death in 1925, Dr. Murie had published the first part of his "Report on the Fisheries of the Thames Estuary", containing Sections 1 to 3 and the greater part of Section 4. The second part, consisting of a large folio volume now in the Southend Public Library, was not published. Part of this is in galley proof, but the sixth section is in manuscript, and was written probably between 1895 and 1912. It was found in 1926 in an outhouse of Dr. Murie's cottage at Leigh, and consisted of a sodden mass of paper. The sheets were carefully separated, dried, and transcribed by the Borough Librarian, Mr. Pollitt, and a digest of this unpublished section is embodied in a long article by Mr. A. Laurence Wells, published in the *Southend Standard* (Jan. 7 and 14, 1931), entitled "Special Thames Estuary Fisheries". The matter is full of interest and covers a wide field. It consists mainly of detailed notes on the various fisheries in the Thames Estuary, especially those relating to the Leigh fishermen, and embraces the history of many of the older industries and the methods employed, both ancient and modern. These carefully collected data about each individual fishery are of historical value. Many of the methods are now obsolete, but most of the fisheries themselves are still flourishing.

WHITEBAITING is a comparatively recent industry among the Leigh fishermen. Some two hundred years ago it was practised up the river beyond Blackwall, but pollution of the water has driven the whitebait more to the Thames mouth, where the fishing is principally carried on. At first they fished only in spring, then in the original season from February to August; now they fish throughout the year. Shrimping, on the other hand, is an industry of long standing, begun about a hundred years ago. Starfish dredging used to be profitable, now it is almost extinct. The five-finger star is a great enemy of the oyster, and in dredging for them the fishermen not only helped the oyster but also utilised the starfish by selling them to the farmer for manure. Now, however, owing to chemical manure, the farmer no longer wants them. Other enemies which are much dreaded both by the

whitebaiters and the shrimpers are the jelly-fishes and ctenophores, known by them as 'flat gall' and 'nut gall'. These come swarming from the sea during April and May, clogging the nets so that a continual and wearisome sorting is necessary. This manuscript is an important addition to the literature concerning the Thames Estuary fisheries, and all workers on the subject are indebted to those who have made it available to the public. Although containing about 22,000 words, it is obviously unfinished, for further sections were indicated consisting of notes on many other specialised forms of fishing.

Geodesy in India

THE Geodetic Report of the Survey of India, vol. 6, deals with the very varied and extensive work done during the period Oct. 1929–Sept. 1930. A regular latitude variation programme has been started, supplementing the regular longitude observations, and in due course will throw light on the existence or otherwise of crustal drift. The irregularities in the longitude results remain unexpectedly large: to improve the time-keeping, a Shortt clock has been obtained. The form of the geoid in India and the gravity work have now brought irrefutable confirmation of Burrard's Hidden Range, which at first was inferred from rather scanty deflexion data; the Hidden Range is found to be flanked on both sides by troughs. Again, the levelling results obtained in Bengal during the last seventy years have been discussed. The closing errors of the various circuits are found to be surprisingly large, much greater than should occur in the class of levelling explained. It appears that they can be simply and naturally explained by supposing that real changes of level have occurred. Parts of the alluvial plains of northern Bengal and Bihar seem to have been rising at the rate of one foot in twenty years; tidal records indicate that Calcutta is not sinking, so that the country farther north is presumed to be rising. Further, tidal predictions for the Indian Ocean have been published in a new and cheap form of greatly increased scope, on lines similar to those of the Admiralty Tide Tables.

British Museum (Natural History) Acquisitions

AMONG the recent acquisitions by the Department of Zoology are two important gifts from the Rowland Ward trustees, namely, the skull and horns of a fine specimen of the giant sable antelope from Angola and a group of the little ant-eater from northern Brazil. A valuable collection of birds has been received from Mr. R. E. Moreau, secretary and librarian of the East African Agricultural Research Station at Amani, Tanganyika Territory. This collection, which was made by the aid of a grant from the Godman Exploration Fund, consists of some four hundred specimens belonging to about two hundred species, of which eight appear to be new to science. Acquisitions in the Department of Minerals include a large block of granite showing quartz-porphyry and a vein of aplite, from Penryn, Cornwall, presented by Mr. Ernest H. Davison; samples of platinum ore from Southern Rhodesia, presented by the director, Geological Survey of Southern Rhodesia, and specimens from

other regions. A model of the largest platinum nugget found in the Urals and crystals of sulvanite (sulpho-vanadate of copper) from Utah have been purchased. The herbarium of the Royal Botanical Society of London has been presented by the Council to the Department of Botany. A valuable collection of about eleven thousand European mosses has been presented by the Rev. P. G. Rhodes; and Mrs. T. G. Elliott has presented about four hundred specimens of Ceylon ferns collected by her father, the late Rev. E. N. Freeman. The latter is of special interest as being the first large collection of localised Ceylon ferns received by the Department.

Hippophagy in Ancient Palestine

AN interim report from Sir Flinders Petrie on his excavations at Tell-el-Ajjul in southern Palestine, in the *Times* of Feb. 24, dwells on the significance of the exploration of this area for the history of the Hyksos domination in Egypt and Palestine. "The south of Palestine", it is said, "proves to be the best source for understanding this great catastrophe of ancient times." The date of the city is now fixed by scarabs of Apepa I. and the names of other Hyksos kings. The work of this season has brought to light a new custom. It will be remembered that last year the remains of a horse were discovered in one of the large pit-graves on the plain below the tell. The horse was disposed in the centre, while the bodies of the members of the family lay on shelves around the pit. Now the remains of a horse have been discovered which had evidently been sacrificed and its body buried under the foundations of a large building. Near by an oven had been built for the purpose of cooking the thigh and shoulders of the victim for a feast, while another horse had been completely cut up and the bones left on the ground after it had been eaten. Sir Flinders Petrie adds the interesting comment that no other example of hippophagy has been found in the east, and in the west the practice is not known later than the stone age.

Prof. W. E. Garner

THE course of lectures on detonating substances which was to have been given at the Royal Institution on March 1, 8, and 15 by Prof. W. E. Garner, Leverhulme professor of physical chemistry in the University of Bristol, has been postponed owing to an accident to him. Prof. Garner has been engaged for some time in a research on solid explosive substances. On Thursday, Feb. 25, when he was about to remove a crystal of pure lead azide from a cardboard pill-box containing about 5 mgm. of the material, as he raised the cover of the box with his right hand, the material exploded. Two of his fingers were seriously damaged and his left hand received lesser injuries. We are glad to learn that he is making very satisfactory progress.

French Exploratory Voyages

A USEFUL chart of the world showing all the great French voyages of exploration from the fifteenth to the early nineteenth century is included in the issue of *La Géographie* for July-August 1931. The

chart, originally prepared by M. H. Roussilhe and L. Bergelin for the Exposition Internationale d'Anvers in 1930, is based on the original itineraries and charts of the voyages concerned, and though on a comparatively small scale, is remarkably clear. An old-world appearance is given to it by various reproductions of vessels of the periods of different voyages, taken from contemporary sources and suitably placed on the oceans.

New Land Speed Records

ON Feb. 24, at Daytona, Florida, Sir Malcolm Campbell set up a new record for land speed in his car *Blue Bird*. On two runs, northwards and southwards respectively, over a measured mile, his average time gave a speed of 253.968 miles an hour, thus beating his own record made last year at the same place and in the same car by about eight miles an hour. Sir Malcolm made a further attempt on Feb. 26, but his speed over the measured mile was returned as 251.748 miles an hour. His average for five miles, however, worked out at 242.751 miles an hour, thus beating his own previous record for this distance by more than thirty miles an hour. Sir Malcolm's car *Blue Bird* had been fitted with a new and more powerful Napier engine of approximately 1500 h.p.

Muslim Association for the Advancement of Science

THE objects of this Association, which was inaugurated at Aligarh about a year ago, are to stimulate research work amongst Mohammedans by means of grants in aid of special laboratory apparatus, research materials, and laboratory assistance. The Association is undertaking the publication of specialised memoirs by distinguished investigators in its *Proceedings*, and its constitution permits the creation of research professorships and visiting lectureships as soon as sufficient funds become available. Nawab Masood Jung, vice-chancellor, and Dr. R. F. Hunter, the present holder of the Nizam chair of chemistry in the Aligarh Muslim University, are the first president and vice-president respectively, but the Association's constitution has now been extended to include representation on its council from British India, Hyderabad, and Egypt.

The Hayden Memorial Gold Medal

IT is announced that the Academy of Natural Sciences of Philadelphia has awarded the Hayden Memorial Gold Medal for 1932 to Dr. Reginald Aldworth Daly, Sturgis-Hooper professor of geology in Harvard University. This is the outstanding American award for pre-eminence in geological and palæontological research. Prof. Daly's work chiefly involves the study of igneous rocks, their genesis, and the mechanics of their intrusion into the mountains of the earth. Other of his outstanding contributions to geology are his glacial-control theory of coral reefs, his work on the eustatic shift of oceanic level, and his researches on the constitution of the earth. He has presented many of his ideas in popular form in his book, "Our Mobile Earth" (1926). The Hayden award, which is made every three years, was founded in 1888 by Mrs. Emma W. Hayden, of Philadelphia, as

a memorial to her husband, Dr. Ferdinand V. Hayden, director of the United States Geological and Geographical Survey in the early days of that organisation.

Botanic Gardens in South Africa

IN Part 17 of the *Journal of the Botanical Society of South Africa* (1931) is published an excerpt from the report written by Sir Arthur Hill to the Union Government after his tour in South Africa in 1929, which was referred to in *NATURE* of Feb. 7, 1931, p. 217. The report states that at present, owing to lack of funds, the Director of the Kirstenbosch Botanic Garden is working single-handed and the garden staff is inadequate. This refers to 1929, and in the present *Journal* the Gardens have to report a ten per cent reduction of the Government grant which they share in common with other State-aided institutions. On the whole, the moment scarcely seems propitious for the consideration of Sir Arthur Hill's suggestion that South Africa should try to maintain three botanic gardens, with the development of a sub-tropical botanic garden at Durban and a botanic garden with arboretum at Pretoria. It is good to see that the body of supporters for the Kirstenbosch gardens, provided by the Botanical Society of South Africa, continues steadily to grow in numbers. In this same report Sir Arthur Hill presses for the policy of making Table Mountain into a Nature reserve, and it is good to learn that action has now been taken by the Administrator of the Cape Province which gives complete legal protection to the flora and fauna of the Mountain.

Biology and Quantum Theory

PROF. NIELS BOHR, of Copenhagen, has brought together a collection of articles dealing in a rather general way with modern physics, under the title "Atomtheorie und Naturbeschreibung" (Berlin: Julius Springer, 1931. 5-60 gold marks). Reference is made in several of the articles to the question of the relation between the development of quantum theory and the formulation of the fundamental problems of biology. The point of view which is taken is that a consideration of the new ideas and methods of physics, often essentially foreign to ordinary conceptions and experience, may indicate how the discussion of the place of living organisms in our scheme of things should be approached. Prof. Bohr directs attention to the existence of a natural limit to the investigation of life in the inevitable death of an organism which is subjected to a complete physical investigation of its atomic constitution. A recognition of the importance of such matters is perhaps becoming rather general, as we find Dr. P. A. M. Dirac grouping the problem of life with the relativistic formulation of quantum mechanics and the nature of atomic nuclei—as a "more difficult" problem—in the introduction to a paper on quantised singularities in the electromagnetic field, in the *Proceedings of the Royal Society* for last September, but it can scarcely be irrelevant to refer here also to Samuel Butler's ingenious treatment of a similar topic in "The Book of the Machines", sixty years ago, in "Erewhon".

Announcements

By an order of the Committee of Privy Council, Mr. W. S. Morrison, M.P., has been appointed a member of the Medical Research Council, on the retirement of Major A. G. Church.

PROF. G. ELLIOT SMITH, professor of anatomy in University College, London, has been given the honorary degree of M.D. by the Egyptian University, Cairo, on the occasion of its first convocation, held on Feb. 27. Prof. Elliot Smith was at one time professor of anatomy in the Government Medical School, Cairo.

THE third Pedler lecture before the Chemical Society, entitled "The Life and Work of Otto Wallach", will be delivered by Prof. L. Ruzicka, of Zurich, on March 10, at 5.30 P.M. The lecture will be given in the Meeting Hall of the Institution of Mechanical Engineers, Storey's Gate, Westminster, London, S.W.1. Tickets of admission will not be required.

AT the annual general meeting of the Association of Economic Biologists held on Feb. 26, the following officers were elected: *President*, Dr. W. B. Brierley; *Vice-Presidents*, Dr. W. R. Thompson and Mr. A. D. Cotton; *Hon. Treasurer*, Dr. J. Henderson Smith; *Hon. Editors*, Dr. W. B. Brierley and Mr. D. Ward Cutler; *Hon. Secretaries*, Prof. J. W. Munro and Prof. W. Brown.

WE have already referred to the sixteenth Annual of the Paris Academy of Sciences (Feb. 6, p. 199), which contains a complete list of members, going back to 1795. The Academy has now issued a small volume containing a list of members and *correspondants* during the period 1666-1793 (Paris: Au Palais de l'Institut, 23, quai de Conti. 1931). This list was compiled by M. A. Lacroix, and gives the dates of birth and death, biographical notes, and posts held by the members.

APPLICATIONS are invited for the following appointments, on or before the dates mentioned:—An assistant biochemist at the General Hospital, Birmingham—The House Governor, General Hospital, Birmingham (March 12). An aircraft and engine inspector under the Government of India—The High Commissioner for India, General Department, India House, Aldwych, W.C.2 (March 12). A principal of the Sheffield City Training College for Teachers—The Director of Education, Education Office, Sheffield (March 14). An assistant medical secretary of the British Medical Association—The Medical Secretary, British Medical Association, Tavistock Square, W.C.1 (March 14). A professor of education and head of the men's training department of the University College of South Wales and Monmouthshire—The Registrar, University College of South Wales, Cardiff (March 22). A professor of geology in the University of Birmingham—The Secretary, University, Birmingham (April 11). A woman lecturer in biology at Edge Hill Training College, Liverpool—The Principal, Edge Hill Training College, Liverpool (April 19). An assistant bacteriologist in the Central Tuberculosis Laboratory of the King Edward VII. Welsh National Memorial Association—The Bacteriologist, Institute of Preventive Medicine, The Parade, Cardiff.