

uphill task he had during his first year, in a government office in Parliament Street, Cape Town, without either laboratory or practical equipment of any kind. He was, however, able to persuade the Ministry of Agriculture that a vessel for dredging and trawling, a museum for storing the specimens, and a marine laboratory and aquarium were necessary.

Gilchrist was particularly fortunate in securing as the first captain of the government trawler, Alexander Turbyne, a keen fisherman naturalist, who had been trained under the late Sir John Murray. An important practical result of the preliminary surveys of the S.S. *Pieter Faure* was the discovery in 1898 of a rich fish-ground on the Agulhas Bank, within easy reach of the markets of Cape Town. This discovery appealed alike to the public and to the Government, and led to greater financial support.

While recognising the necessity of developing the economic aspect of marine biology, Gilchrist always kept the more purely scientific point of view in his mind. The Cape waters had only been explored in a cursory manner by such expeditions as the *Challenger* and the *Gazelle*, and thus there was open ground for more thorough investigations. The dredging and trawling expeditions of the *Pieter Faure* resulted in the capture of more than twenty thousand specimens, the majority of which, with the exception of the fishes, were despatched home to be studied by specialists. From the papers published by these workers, and from his own contributions, Gilchrist edited the volumes "Marine Investigations in South Africa" (1902-1907). In 1907, however, during a period of severe financial

depression in the colony, the office of Government Biologist was abolished, but the publications were revived in 1913, under a new board, as "Marine Biological Reports of the Cape Province."

From 1905 to 1917, Gilchrist was professor of zoology in the South African College, and when, in 1918, the latter developed into the University of Cape Town, he held the chair of zoology until in 1925 ill-health compelled his retirement. After his resignation he still carried on some work at his favourite haunt, the St. James Marine Station, on the shores of Kalk Bay.

Gilchrist was the author of numerous papers, dealing more especially with the description of new or rare species of fish, and of their larval development; but he also contributed publications of more general interest, such as those on the early stages of *Cephalodiscus gilchristi*, on the enteropneust, *Xenopleura vivipara*, on the remarkable crawling medusa (*Cnidonema capensis*, g. et sp. n.), and on the temperature and currents of South African seas.

Sometimes Gilchrist may have conveyed the impression of a man who lived in a little world of his own, wrapped up in thoughts of his fishes and other denizens of the sea, but that he could free himself from these deliberations is proved by his work for science in the colony, as president of the Philosophical and later of the Royal Society of South Africa, and as one of the main organisers of the South African Association for the Advancement of Science.

Gilchrist married Elfreda Ruth, daughter of S. H. Raubenheimer, of George, C.C., and is survived by his widow, a son, and a daughter.

News and Views.

ONE of the problems to which the Imperial Conference has been devoting attention is the present position of forestry within the British Empire. A sub-committee was set up, which dealt with this matter on broad lines. It is a hopeful augury for the future that the question of a forest policy common to the Empire as a whole, with especial reference to the world's timber supplies, should have been examined in some detail. It is an accepted fact that the available virgin supplies of the soft woods (pines and firs) are giving out, Canada and north Russia and Siberia containing the chief remaining stocks. About eighty per cent. of the wood used for industrial purposes consists of the soft woods. As regards the hard woods, the available supplies of these from temperate climates are not regarded as satisfactory, and their replacement by tropical hard woods offers difficulties which are very far from solution. Apart from the question of the availability of the existing supplies to meet demands, there exist social and economic problems which make it necessary that each country, and perhaps more especially the British Empire, should formulate a policy which shall maintain a sufficient forest area under a conservative forest management. At the present day a large proportion of the Empire forests have little that can be termed a scientific conservative management in being; the Imperial Conference will have made a long step forward if, as a

result of the deliberations and recommendations of the sub-committee, a consistent forest policy is formulated and adhered to. Other matters given consideration were Empire settlement and its connexion with forestry, the meeting of the Empire Forestry Conference in Australia and New Zealand in 1928, forest products research work, and the proposed inauguration of an Imperial Forestry Bureau.

THE silver medal of the Zoological Society of London has been awarded to Capt. H. C. Brocklehurst, the Game Warden of the Sudan, in recognition of his services to the Society, and for the active part which he has taken in the preservation of the wild fauna of that part of Africa. The medal, which was designed by Landseer, has been awarded on forty-eight previous occasions, the first recipient being Sir Roderick Murchison, in 1847, "for assisting in the introduction of the Aurochs." Capt. Brocklehurst has been instrumental in obtaining several valuable collections of animals for the London Zoo. The last of these included two giraffes, two Sudanese oryx, and three shoebills, or whaleheaded storks, now one of the rarest birds in the world. The white rhinoceros, which a little time ago was threatened with extinction, comes directly under Capt. Brocklehurst's care, and it is reassuring to hear from him that, owing to the proper administration of suitable game laws, this wonderful

animal, which sometimes exceeds 6 ft. at the shoulder, not only is out of danger of becoming extinct, but is even increasing so rapidly that a certain number are now allowed to be shot each year, and he has every hope of obtaining a young one for the Society's collection. From other parts of Africa the reports on game preservation are equally reassuring, especially from the Transvaal, where, after twenty-six years of political struggle, the Great Sabi Game Reserve has been established on a permanent basis, and has been given the name of the Kruger National Park. In relation to this it is highly satisfactory to note that Col. J. Stevenson Hamilton, who was chiefly responsible for getting this measure approved by the Union Government, has accepted the post of secretary to the Society for the Preservation of the Fauna of the Empire.

THE Nobel prize for medicine has been awarded to Dr. Johannes Fibiger, professor of pathological anatomy in the University of Copenhagen, who has spent many years in the study of cancer and is best known for his work on the nematode *Gongylonema neoplasticum*. This worm lives in cochraches, and, when these are eaten by rats, passes into their stomachs, where by the irritation it produces it initiates the growth of malignant tumours. Prof. Fibiger has worked out the whole process in great detail, and thus made notable additions to our knowledge of the relationship of irritation to cancer. Other examples where the irritant is a worm are the cancers of the bladder in man in Egypt caused by *Schistosomum* and the sarcoma of the liver in rats often associated with the hydatid phase of *Taenia crassicolis*.

CANON J. M. WILSON, who at Rugby and Clifton did much to introduce practical science teaching into schools, and is now in his ninety-first year, must be known to a wide public as having been a consistent champion of evolutionary ideas in religion long before such ideas had become at all popular in theological circles. The earnestness, moderation, and candour of his writings commended evolution to many minds which otherwise would have continued to regard it with dislike and misgiving. A recent pamphlet by Canon Wilson, "Christianity in the Light of the Idea of Evolution" (London: *Guardian* Office), shows that the powers of this veteran apologist have not declined. Indeed, with remarkable acumen, he lays his finger on what certainly are the critical points to-day. The principle of evolution has now been extended beyond the biological sphere to anthropology and psychology, and it is these applications which are causing trouble to many thoughtful people. Religious beliefs are no longer refuted, but explained, as one writer has put it. Yet, as Canon Wilson sees it, the idea of a gradual evolution of belief is a very valuable one, even from the specifically religious point of view. "The evolution of theology," he writes, "may be welcomed; or it may be ignored and hushed up; or it may be disliked and denounced. But it cannot be denied. It is a fact, and a fact of the greatest significance." This evolution of ideas may

be regarded as "progressive discovery," which from another point of view can still be called revelation. This conception is especially fruitful in the study of the Old Testament, which is "the story of man's progressive discovery in theology."

In England this would nowadays be accepted by even conservative scholars; but it is not always realised, as it is by Canon Wilson, that the same principle applies to the New Testament and to the development of the Creeds. In the New Testament there are several quite distinct strata of theological development, and the need for 'restatement' was felt so early as the first century. It is only by disregarding history that the idea of a fixed and final theology becomes possible. The problem now is, as Canon Wilson points out, "to enshrine in a transformed and more elastic framework the old and deep religious experiences expressed in the Bible and the Creeds and other formularies." This is scarcely the place to expand these ideas, but it is gratifying and encouraging for students of science when they see an eminent theologian taking up an attitude of this kind; for even men of science have their religious instincts, which they would be better able to satisfy if the spirit animating Canon Wilson were more widespread. His position is that "religious faith is henceforth to be based on experience and observation; it has become scientific." From this point of view theology must always be secondary, being the interpretation of an experience. In science there are no such things as final interpretations or unchangeable hypotheses; and if the same principle were recognised in religion, religion would share some of the vitality of natural science, and be a great deal more useful to humanity.

WE have received the abstract of a lecture entitled "Life and Mind" which was delivered by Dr. Bernard Hollander before the Ethological Society on October 25. Dr. Hollander is to be congratulated on his courage, for life and mind may be said to be the two ultimate problems of the universe, since only through the senses and minds of living beings do we know anything at all about the universe. He asserts that life and mind are 'forms' of energy—a statement which we think erroneous. Dr. Hollander, indeed, is not comfortable about it himself, for he goes on to say: "If the brain were purely a mechanical apparatus producing mind, we could not be at the same time spectators. Those who think so always look at others. No one considers his own self a piece of mechanism, a part of the universal clockwork." We think that the confusion arises from overlooking the fact that life and mind are presuppositions of all knowledge. What we call 'mind' is a name for our own personality and its activities through which we learn about everything else, energy included. All else is a series of presentations to our mind, presentations which are coloured by its activities. We can no more get outside ourselves and view ourselves from outside than we could lift ourselves out of a marsh by our own waistbands. The first and soundest conclusion which we come to about phenomena, a conclusion arrived at before we reach the mature age of one year, is that many of these

phenomena are the result of the activities of personalities like our own. Other phenomena we gradually perceive are the expression of simpler activities, and our conceptions of matter and energy are all in the last resort pale abstractions from our primary conception of 'selves.' For the sake of convenience in classifying phenomena, we neglect this consideration, and affect to regard animals and plants as mere collections of matter and their activities as 'a kind of energy.' Life, as Tyndall pointed out long ago, is not energy at all but the control of energy, the constant composition and moulding of energy. If in attempting to solve an algebraic problem we should designedly leave out one factor in order to arrive at a simpler solution, we should fully realise that this solution could only be partially true. When mechanistic biologists ignore the subjective element in knowledge, their solutions must necessarily be profoundly untrue.

In a lecture to the Royal Geographical Society on November 15, Mr. J. A. Steers discussed some of the changes that are taking place in the coastline between Hunstanton and the Orwell-Stour estuary. This is a submerged low coast modified by marine erosion and the action of longshore currents which have dammed several of the streams and elsewhere have led to the growth of spits. Mr Steers mentioned an effect of tides which is sometimes overlooked. The direction of tidal drift is known to change with ebb and flow, but owing to the difference in level of the water the material worked on at high water is distinct from that worked on at low water, so that there often are two opposed movements of beach material on the same foreshore. This is noticeable at Blakeney, where the shingle has pushed westward, and the sand, at a lower level, eastward. Among other interesting points raised in the lecture was the origin of the shingle on the north coast of Norfolk. Analysis shows 99 per cent. of it to be flint, and the remainder to be igneous rock of Scottish and, to a less extent, Scandinavian origin, with a few fragments of sedimentary rock. The prevalence of flint points to an origin not far distant, but the exact source is not yet known. Mr. Steers discussed at some length the origin of Blakeney Point, Lowestoft Ness, Orford Ness, and other recent growths of the coast.

To hold an exhibition of coal products during the present stressful period in the coal industry might be considered somewhat hazardous, for exhibitions involve considerable expenditure on the part of exhibitors, but publicity, and especially co-operative publicity, has been found to pay, and nothing seems to daunt the spirits of our industrial firms in good times or in bad. The National Coal Products, Chemical, and Engineering Exhibition, which is being held on November 16-27 in Manchester, is a co-operative venture sponsored by the Manchester Section of the Society of Chemical Industry, and organised by Provincial Exhibitions, Ltd. When planned last May, it was hoped that the coal strike would be ended long before November, but as events proved contrary, the original scheme of confining the exhibition to tar and tar-products was abandoned,

and the subject of methods of utilising coal was substituted. As the strike still continued, it was decided also to display many exhibits relating to the value of research upon coal and its products. The list of exhibitors in the City Hall contains the names of the principal organisations that are investigating coal, those of a few chemical firms and a large number of plant manufacturers. Everything possible has been done to attract and instruct the public, and if we are not sure that (as the official catalogue states) all the visitors will feel that in Manchester they are in the actual workshop of the country, and, not merely looking into the Empire's shop-window as in London, we are certain that the promoters of the exhibition deserve the thanks of the scientific community for their initiative and enterprise. In connexion with the exhibition, a conference on tar is being held on November 26, at which important papers are being read by members of the Society of Chemical Industry, the Institution of Gas Engineers, and the Coke Oven Managers' Association.

THE Lloyd Roberts Memorial Lecture was delivered at the Manchester Royal Infirmary on November 9 by Dr. W. E. Gye, who chose as his subject "The Cancer Problem." He reviewed his former work and described further experiments, all of which tend to confirm the conclusions he then reached. His work has been largely prosecuted with the Rous chicken sarcoma, which, unlike most malignant tumours, possesses a 'filterable' virus. If a Rous tumour be triturated and filtered through a porcelain filter, the filtrate injected into a fowl induces tumour-formation; the causative agent is therefore a filterable or ultra-microscopic one. If the filtrate be heated to 55° C. for 15 minutes, or treated with an antiseptic such as acriflavine before injection, it loses its potency, the causative agent becoming inactivated. But if a portion of heated filtrate be mixed with a portion of filtrate treated with acriflavine and the mixture injected into a fowl, tumour formation results. Dr. Gye concludes, therefore, that the causative agent of the Rous tumour consists of two parts, one of which may be destroyed by heat, the other by an antiseptic such as acriflavine, and that both are necessary for tumour formation. To the former heat-labile substance the name of 'specific factor' is given; the other factor is regarded as being a living virus or micro-organism. A tumour of one species of animal cannot be transplanted into another, but a mixture of inactive Rous tumour extract (inactivated by acriflavine) with extract of human cancer produces in the fowl a tumour microscopically like the Rous tumour. Many substitution experiments of this kind have been performed with similar results, with one or two curious and inexplicable exceptions only. Dr. Gye believes that the specificity or essential characters of a malignant tumour are carried by the heat-labile agent called the 'specific factor,' and that the other factor is a living virus (or viruses) which becomes operative only when the specific factor is present as well. The fact that cultures in serum broth of

tumours (up to the seventh remove) may be substituted for direct extracts in these experiments supports this view. At the same time, other possible, though unlikely, hypothesis are being explored.

THE Factories and Workshops Report for 1925, which was recently issued by H.M. Stationery Office, is instructive and interesting. The work done by the inspectors is very thorough, and the recommendations they have made in previous years have been of great value to the many industries concerned. It seems fairly certain that explosions in works employing benzene and other inflammable products are sometimes caused by electrostatic sparks. This can be prevented in some cases by the use of suitable brush collectors to discharge the electricity on driving-belts. The total number of accidents directly attributable to electricity is 414, and includes 24 fatal cases. This is less than last year; and considering the great increase in the work done in the electrical industry last year it is satisfactory. Twelve of the fatal cases were due to shocks from pressures not exceeding 250 volts. In all these cases alternating current was employed. In one case when a man was inspecting the machinery of a motor car, using a lamp connected with the supply, the lamp broke and the metal car, being insulated from earth by the tyres, became alive, owing to touching a terminal. Although the man was able to call out for the switch to be turned off he was unable to let go and was killed. Another fatal accident was due to a practical joke, the bell handle being connected with one of the supply mains. The worst accidents are caused by a hand to foot shock; the hand, for example, touching the cover of a defective switch, the cover of which has become alive, and the foot making a good contact with the earth through a damp boot. If a person is well insulated from earth he only gets a trifling shock when a spark takes place between him and a high-tension terminal. The present regulations seem quite satisfactory, but they need to be enforced. The senior electric inspector, Mr. G. S. Ram, urges that contractors and others should take special precautions when installing an alternating current supply.

THE increasing facilities rendered available in recent years for the publication of geophysical papers have amply justified themselves, and appear to have greatly stimulated interest and investigation in the subject. In Great Britain the only distinctively geophysical periodical is the *Geophysical Supplement to the Monthly Notices of the Royal Astronomical Society*, and the Society has rendered great service by giving the subject of geophysics this valuable support. The supplement is paged separately from the *Monthly Notices* proper, and forms a distinct journal; it is now nearing the end of its first volume, and No. 7, recently issued, deals in its eight papers with an interesting variety of subjects: seismic waves, the elastic yielding of the earth, the rigidity of its central core, magnetic storms, tidal motion, and the relation between barometric pressure and gas pressure in mines. All these papers have been presented to the Society in the early part of this year. Another

thriving journal, also published mainly in English, which deals largely but not entirely with geophysics, is the *Japanese Journal of Astronomy and Geophysics*, published by the National Research Council for Japan; beside published papers in full, it gives short abstracts of other cognate papers published in Japan. The recently issued part, vol. 3, No. 3, contains an article on the possibility of gravitational waves in soil, together with no less than 86 abstracts (occupying 33 pages of small print) of other astronomical and geophysical papers.

AN Egyptian wing has been added to the Museum of the University of Pennsylvania, Philadelphia, in memory of the late Mr. Eckley Brinton Coxe, junior. Mr. Coxe was president of the Museum from 1910 until 1916, and was not only a generous benefactor during his lifetime, but also left a sum of half a million dollars at his death for the promotion of Egyptian studies. It will be remembered that extensive investigations at Memphis, including the excavation of the Palace of Merenptah, were carried out by the Eckley B. Coxe Expedition, and many of the objects now installed in the wing and shown for the first time were obtained by this expedition or others on this foundation. A description of the new wing, which was opened in May last, and of some of the principal exhibits, appears in the *Museum Journal* (Philadelphia) for June. It contains twelve rooms appropriate in design and harmonising in colour and proportion with the exhibits. Eight rooms are devoted to Egypt, while Ur, Beisan, Persian art, and Arabic art each have a room, those of Ur and Beisan being used for exhibition of the objects obtained by the expeditions of the Museum now in progress.

THE Sterling fellowships were established by a gift of one million dollars from the trustees of the estate of the late John W. Sterling to stimulate scholarship and advanced research in all fields of knowledge. They are open to graduates who desire to carry on studies under the direction of the Graduate Faculty of Yale University. The fellowships are divided into two general classes: Research or Senior Fellowships for candidates of the standing of the Ph.D. degree, of the annual value of 200l.-500l.; and Junior Fellowships for candidates who are well advanced in their work towards the Ph.D. degree, of the annual value of 200l.-300l. All fellows are appointed for a single year in the first instance and are required to submit reports on their work, either at stated intervals or at the expiration of their fellowships. Application forms, to be returned by March 1, can be obtained from the Dean of the Graduate School of Yale University, New Haven, Connecticut.

THE British Museum (Natural History) has issued four additional natural history booklets in the attractive series commenced last year. The new subjects include the pine marten, the harvest mouse, the fallow deer and the barn owl (Price 6d. each). As before, each booklet contains a short account of the history and habits of the animal, and is accompanied by a charming coloured illustration. Among

the latest sets of postcards to be published by the Museum is the second series of portraits of famous naturalists (Price 1s.). This set includes Sloane, Banks, Leeuwenhoek, Mendel, Seba and Shaw, among others, and a pamphlet enclosed with the set gives concise details of their lives, with special reference to their contributions to natural history. The series of British Museum postcards now covers a wide range of subject and interest, and there can be little doubt that their publication has contributed considerably to the popularity of the institution and to public interest in its collections.

MR. F. G. LLOYD, 1 Sinclair Road, Kensington, W. 14, writes to ask if it is very uncommon now to find the Camberwell Beauty butterfly near London, as a patient had given him a perfect specimen caught near Honor Oak Park Station in the summer of 1911 or 1912. Dr. James Waterston, of the Natural History Museum, South Kensington, has been good enough to send us the following answer to this inquiry: "The Camberwell Beauty is, in Great Britain, a somewhat rare visitor, occurring not in the late spring or early summer (as is commonly the case with other immigrants), but more frequently in August or later. While the species has been proved to hibernate occasionally in Britain, no authentic occurrence of the larva or pupa is on record. 1911 appears to have been a Camberwell Beauty year, and, according to information supplied by my friend Capt. N. D. Riley, the species was then recorded (August) from, amongst other places, Berkhamstead; Bradwell-on-Sea, Essex; Brading, Isle of Wight; Chelsfield, Kent. With all this, the occurrence of the Honor Oak Park Station specimen falls into line. The interest of Mr. Lloyd's record is rather a sentimental one, the species on this occasion having been taken, after a long interval, in the locality from which it received its popular name."

THE *Scientific American* for October contains a very discursive but interesting article on "Hunting Fossil Insects," written in the well-known free-lance style of that entomological genius Prof. T. D. A. Cockerell. The insects dealt with are two collections of Tertiary fossils, one from some new beds on the banks of the Kudia river in the Amagu region of Siberia, opposite the southern shores of Sachalin, the other from the Santa Barbara district, Province of Jujuy, Northern Argentina. In each case, Prof. and Mrs. Cockerell underwent an adventurous journey to obtain the specimens, and the chief interest of the article lies perhaps in the illuminating remarks about the conditions of the countries through which they passed. Prof. Cockerell has, we believe, dealt with both collections scientifically elsewhere. We think it important to point out that he is in error in assuming that his Argentine Tertiary insects were the first fossil insects to be discovered in the whole of South America. Prof. Wieland, of Yale University, discovered two very fine Rhaetic specimens near Mendoza a good many years ago; one of these was a Homopteron and the other a caddis-fly. It was a pity that Prof. Cockerell did not know of this bed, as he might have found further specimens. From the article

before us we learn some interesting points about the sect of the "Old Believers," whom, it appears, the Bolsheviks have left somewhat severely alone, so that they still keep their old religion and customs. "Our guide explained that even the Old Believers had had their revolution"; but apparently it was a mild one, as they are still allowed to drink whisky, though tea and coffee are taboo!

SIR ARTHUR KEITH and Mr. C. R. Peers have been elected honorary members of the Yorkshire Philosophical Society.

REPLYING to a question in the House of Commons on November 21, Mr. Amery, Secretary of State for the Colonies, said that the appointment of director of the Amani Institute has been accepted by Mr. W. Nowell, Director of Science and Agriculture, British Guiana. On his arrival in England from British Guiana the new director will be invited to submit recommendations as to the staffing of the Institute.

A PORTRAIT of Michael Faraday, and a reproduction of the portrait of Lord Kelvin painted by Herkomer for the Institution of Civil Engineers, both by Mr. George Harcourt, R.A., will be shown in the lecture theatre of the Institution of Electrical Engineers in the positions allotted to them at the ordinary meeting on December 2. After introductory remarks by the president, Mr. Harcourt's portrait of Faraday will be presented to the Institution by Mr. Sydney Evershed.

At the annual general meeting of the London Mathematical Society, held on November 11, the following officers were elected: *President*, Prof. G. H. Hardy; *Vice-Presidents*, Prof. S. Chapman, Prof. A. L. Dixon, Mr. J. E. Littlewood; *Treasurer*, Dr. A. E. Western; *Librarian*, Prof. H. Hilton; *Secretaries*, Prof. G. N. Watson, Mr. F. P. White; *New Members of Council*, Prof. H. F. Baker, Prof. A. S. Eddington, Prof. E. H. Neville.

It is announced in *Science* that the Perkin medal for 1927 has been awarded to Dr. John Teeple, treasurer of the American Chemical Society, for "significant scientific, technical, and administrative achievements, particularly the economic development of an American potassium industry at Searles Lake, Calif." The committee of award consists of representatives of the American Section of the Society of Chemical Industry, the American Chemical Society, the American Electrochemical Society, the American Institute of Chemical Engineers, and the American Section of the Société de Chimie Industrielle.

At the annual general meeting of the Philosophical Society of the University of Durham, the following officers were elected: *President*, The Earl of Durham (Chancellor of the University of Durham); *Secretary*, Dr. Grace Leitch; *Treasurer*, Mr. J. W. Bullerwell; *Editor*, Dr. Todd; *Librarian*, Dr. Bradshaw; *Assistant Librarian*, Mr. E. Patterson; Sectional Officers, the chairman and secretary of each section being given in brackets: Chemical and Physical (Dr. P. L. Robinson and Mr. O. Darbyshire), Geo-

logical and Biological (Dr. Kathleen Blackburn and Dr. Allan), Mathematical (Mr. Colborne and Mr. Miles), Applied Science (Dr. Morrow and Dr. Baker), Philosophy (Dr. A. Robinson and Mrs. Alderson), Archaeological and Historical (Dr. J. Wight Duff).

WE are informed by Messrs. Ernest Benn, Ltd., that Lady Bell is editing the letters of Gertrude Bell, which will be published, probably in two volumes, during the course of 1927.

THE latest catalogue (No. 146) of Messrs. Dulau and Co., Ltd., 34 Margaret Street, W.1, gives particulars of nearly 1300 volumes on zoology, botany and gardening, agriculture, geology, palæontology and mineralogy. Copies can be had free from the publishers.

APPLICATIONS are invited for the following appointments, on or before the dates mentioned:—An assistant in the Engineering School, Trinity College, Dublin—The Registrar (November 29). An assistant master, with qualifications in mathematics, at the Government High School, Nassau, Bahamas—C.A. (T.), Board of Education, Whitehall, S.W.1. For Scottish candidates (T.), Scottish Education Department, Whitehall, S.W.1 (December 6). An officer for research work and a professor of pathology at the Punjab Veterinary College, Lahore—The Secretary to the High Commissioner for India, 42 Grosvenor Gardens, S.W.1 (December 10). Chief designer, designer, chief testing engineer, and first assistant

testing engineer at Admiralty Engineering Laboratory, West Drayton—Secretary of the Admiralty (C.E. Branch), Whitehall, S.W.1 (December 13). An instructress in fruit and vegetable preservation, and housemistress of one of the hostels of the Swanley Horticultural College for Women—The Principal of the College, Swanley, Kent (December 15). A bacteriologist in the Department of Agriculture of the Irish Free State—The Secretary, Civil Service Commission, 33 St. Stephen's Green, Dublin (December 16). A principal of the University College of Wales, Aberystwyth, in succession to the late Principal J. H. Davies—The President of the College (D. Davies, Esq., M.P.), Plas Dinam, Llandinam, or The General Secretary, University College, Aberystwyth (January 31). A pathologist at the Cancer Hospital to conduct investigations in the effects of radiation on malignant and normal tissues and body fluids—The Secretary, Cancer Hospital, Fulham Road, S.W.3. A government analyst for the Public Health Department, Southern Rhodesia—The Secretary, High Commissioner for Southern Rhodesia, Crown House, Aldwych, W.C.2. A keeper of the laboratories of the Royal Horticultural Society at Wisley—The Secretary, Royal Horticultural Society, Vincent Square, S.W.1. A temporary assistant in the Research Department, Woolwich, under the Directorate of Explosives Research—The Chief Superintendent, Research Department, Woolwich, S.E.18. An agricultural chemist at the Kirton Agricultural Institute—The Principal, Kirton Agricultural Institute, near Boston, Lincs.

Our Astronomical Column.

COMET COMAS SOLA.—It appears fairly certain from the first ten days' observations of this comet that it is a periodic one, of Jupiter's family. The following orbits are by Mr. G. Merton and Dr. A. C. D. Crommelin respectively:

T=1927, March 2.316 U.T.	1927, March 24.940 U.T.
$\omega=24^{\circ} 58' 20''$	$37^{\circ} 0' 18''$
$\Omega=68^{\circ} 8' 14''$	$65^{\circ} 24' 50''$
$i=11^{\circ} 50' 54''$	$14^{\circ} 0' 4''$
$e=0.41065$	0.53380
$\log q=0.26526$	0.26290
Period=57.525	77.789
Equinox=1926.0	1926.0

The elements bear some resemblance to those of Spitaler's Comet, 1890, VII.: ω for that comet was $13^{\circ} 20'$; Ω $45^{\circ} 6'$; i $12^{\circ} 51'$; $\log q$ 0.2596; period 6.4 years. It has not been seen since that apparition. Observations of the present comet are expected to continue for several months, which should decide the question of identity.

BRITISH TELESCOPES.—We have pleasure in directing attention to a recent publication entitled "Astronomical and Optical Instruments" which has been issued by Sir Howard Grubb, Parsons and Company, largely for the purpose of describing and illustrating the resources and equipment of the Company's new optical works at Newcastle-on-Tyne. The contents of the publication consist of a series of four short articles on (1) the development of optical instruments for astronomy and astrophysics; (2) the British optical industry; (3) the history of Sir Howard Grubb, Parsons and Company; (4) the new optical works of the Company at Walker Gate, Newcastle-on-Tyne. The articles are very attractively written, and are well illustrated with a number of clear reproductions. Of special interest are the plans of sectional elevation of the 45-ft. dome and the 41-inch

refractor, and two photographs showing the framework of the dome and its rising floor now under construction at the works. Reference to this large telescope and to the optical works in general was made in NATURE of September 4, p. 340. The list on pages 44-45 of some of the principal large astronomical instruments made by the firm since it was founded by Thomas Grubb is eloquent testimony to the debt which astronomy, in particular, owes to these noted makers of telescope objectives and instruments.

EARLY ARABIAN ASTROPHYSICS.—More than 90 pages of volume 56/57 of the *Sitzungsberichte der Phys.-Med. Soz. Erlangen* are devoted to a presentation of the contents of an early Arabic treatise on the Light of the Moon by Al Hazen, with comments by the translator, Dr. Karl Kohl, of the University of Erlangen. Al Hazen, or al Hasen Ibn al Haitham, was born at Basra but spent most of his life in Egypt. He incurred the displeasure of the Calif al Hakim by the failure of his scheme for preventing the flooding of the Nile and had to conceal himself until the death of the Calif in 1020. He then returned to Cairo, where he died in 1038. His book begins with a short account of contemporaneous knowledge as to the light of the moon; he then shows that phases and eclipses necessitate a spherical moon, goes on to describe his own apparatus and observations, shows that neither transmission nor reflection (according to the laws of ordinary reflection) can explain the light, and concludes, therefore, that the moon is self-luminous, the sun imparting by means of its rays the power of self-luminosity. The original treatise appears to be in the India Office, but we have been unable to find any statement as to how it became available for translation.