

## Obituary.

GENERAL SIR CHARLES WARREN, K.C.B.,  
G.C.M.G., F.R.S.

GENERAL SIR CHARLES WARREN, the distinguished soldier and archaeologist, died on Jan. 21, in his eighty-seventh year. Born on Feb. 7, 1840, he was educated at Cheltenham College, Sandhurst, and Woolwich, passing into the Royal Engineers in 1857. He had a distinguished career both as technical officer and as a military commander in South Africa and Egypt. He commanded a column in the Boer War, and was afterwards in command of the troops at the Straits Settlements.

Like his fellow soldiers, Gordon, Kitchener, Watson, and Wilson, Warren was greatly interested in research in Palestine. This brought him into touch with the founders of the Palestine Exploration Fund, and from 1867 until 1870 he conducted excavations at Jerusalem and made a reconnaissance of Palestine on behalf of that Society. Notwithstanding much opposition on the part of the local authorities and the difficulty of raising funds, he accomplished valuable work. This bore fruit in a number of publications. He was author of part of "The Recovery of Jerusalem: Underground Jerusalem," 1876, "The Temple and the Tomb," 1880, and the Jerusalem volume of the Survey of Palestine, with a portfolio of plates and excavations (1884). He had also devoted much attention to the question of ancient standards of measurement, and published "The Ancient Cubit and Weights

and Measures" in 1903, and "The Early Weights and Measures of Mankind" in 1914. His connexion with the Palestine Exploration Fund continued throughout his life and he was for some years a member of the committee. This association had brought him closely into touch with Sir Walter Besant, secretary of the Fund. With him he founded the Quatuor Coronati Lodge of Freemasons, the object of which was masonic research, and Warren became its first Master.

WE regret to announce the following deaths:

Mr. W. M. Chauvenet, consulting chemist and mining engineer, who worked at the chemistry of ores and at structural and mining geology, aged seventy-one years.

Dr. Karl Hell, emeritus professor of general chemistry at the Technische Hochschule in Stuttgart, who died on Dec. 11, aged seventy-seven years. He was the author of numerous publications in organic chemistry.

Dr. Herbert A. Howe, dean of the college of liberal arts at the University of Denver and director of the Chamberlin Observatory at the University, who was known for his work on the positions of nebulae and on comets and asteroids, aged sixty-eight years.

Mr. Daniel Irving, president in 1904 of the Institution of Gas Engineers, and chief engineer for many years of the Bristol Gas Company, on Jan. 12, aged seventy-one years.

Mr. John Webster, senior scientific analyst to the Home Office, who had published several papers on arsenical poisoning and on the toxicology of salvarsan, on Jan. 20, aged forty-nine years.

## News and Views.

BEFORE publishing in NATURE of Jan. 8 the article by Capt. C. J. P. Cave on "Popular Long-Range Weather Forecasts," we sent an advance proof to Lord Dunboyne, whose fifty-day forecasts are published in the *Daily Mail* and formerly appeared in the *Field*. Lord Dunboyne desired to reply to the article but found himself unable to do so, and he therefore entrusted his case to his brother, Capt. the Hon. R. P. Butler, whose article appears elsewhere in this issue, together with Capt. Cave's comments upon it. Having now devoted a fair amount of our congested space to the subject we think no more can reasonably be expected, and our readers may safely be left to form their own conclusions upon the evidence which has been placed before them. We are, of course, glad to give Lord Dunboyne credit for a desire to discover principles by which long-range weather forecasts may be secured, and we should be sorry to discourage him or any one else working to achieve this aim. We must point out, however, that the appropriate place to present such principles is a scientific society, like the Royal Meteorological Society, where they would be discussed by people best able to express a judgment upon them. It is of no use to say, as Sir Theodore Cook, the editor of the *Field*, does, in a letter to us, that while Lord Dunboyne contributed the forecasts to the columns of that journal he received "the most satisfactory letters from farmers and correspondents

of every kind in all parts of England." Science is not concerned with belief when processes of Nature are involved, but with evidence; and no principle or theory ought to be recognised in scientific fields unless it can survive critical discussion. When Lord Dunboyne's methods and results are submitted to such a bar of competent opinion, we shall be glad to render a further account of them.

OUR leading article of Sept. 4, 1926, on Prof. Graham Kerr's presidential address to Section D (Zoology) of the British Association at Oxford, has moved Mr. George H. Bonner to return to the subject of the advantages of a classical education in the *Nineteenth Century* for January. The author excuses himself for attempting to revive "so hoary a subject" on the ground that the question of the rival merits of 'classical' and 'scientific' is among the most vital that can be propounded, and that when the subject is thoroughly analysed it may appear that only the fringe has been touched and the real reasons for a preference overlooked. Education, as Mr. Bonner conceives it, is to confront the mind with truth in such a manner that it is immediately recognised and becomes a conscious possession. Broadly speaking, the line of argument taken is that science being confined to observed facts and 'laws,' which are merely theories subject to change with the advance

of knowledge, does not deal with truth in the sense of the apprehension of 'purpose' and the ultimate realities of the universe and God—the essential element in the training of the higher faculties of man and the development of the power of reasoning.

Mr. BONNER goes on to point out that even the 'practical' advantage, usually urged in favour of science, really lies with the classics, which induce an acquaintance with a wide variety of topics and a flexibility and adaptability of mind not to be acquired by a study of facts and the 'laws' of science. In this connexion it is of interest to refer to the closely parallel argument in favour of university education generally in a recent letter to the *Times* in reply to a criticism of the capabilities of university men in business, where it was pointed out that during the War it was pre-eminently a university training which produced the qualities of flexibility, adaptability, and ready accommodation to individuals and circumstance, requisite in the officer trained under stress of emergency. Whether or not we are prepared to follow Mr. Bonner in attributing the individual qualities of Greek literature to the influence of Egypt, it will be allowed that he takes up a strong position when he holds in relation to his main line of argument that the classics form collectively an expression of truth more complete than any literature in the world, enabling man "to see things as they are and not as they seem to be." Mr. Bonner, however, misunderstands our article if he imagines that we discount the value of the teaching of science. To point out where the discipline has failed is not to condemn it but rather to help it to achieve those results which, as a unit in a properly balanced system of education, we know it can produce.

THE Geological Society of London has recently announced the following awards: The Wollaston medal to Prof. W. W. Watts, who has distinguished himself by his work on the ancient rocks of the Charnwood Forest, the igneous rocks of the Midlands, and the stratigraphy of the Welsh border, especially Shropshire. The Murchison medal to Dr. G. T. Prior, Keeper of the Department of Mineralogy in the British Museum (Natural History), who is distinguished especially for his work on the chemical composition of meteorites. The Lyell medal to Sir Albert Ernest Kitson, Director of the Geological Survey of the Gold Coast, where he has distinguished himself by the discovery of manganese, bauxite (aluminium hydrate), and diamonds. The manganese proved to be of considerable importance, especially during the War. The Bigsby medal to Dr. Bernard C. Smith, of the Geological Survey, who has done good work in the Midlands, Cumberland, and north Wales, including some interesting researches on the former courses of rivers and on ancient swallow holes. The Wollaston Fund to Miss M. E. J. Chandler, who, both in conjunction with Mrs. Clement Reid and independently, has made considerable additions to our knowledge of Tertiary and Pleistocene plants by the separation and examination of seeds in sediments. The Murchison

Fund to Dr. S. H. Haughton of the Geological Survey of South Africa, for his work on fossil vertebrates. One-half of the Lyell Fund to Dr. Leonard Hawkes, reader in geology at Bedford College, London, for his researches in petrology, especially on the igneous rocks of Iceland. The other half of the Lyell Fund to Miss Edith Goodyear, senior assistant in the Geological Department of University College, London, for her work on the stratigraphy and palæontology of the Carboniferous rocks.

DURING recent years city and suburban traffic has increased so rapidly that it is very difficult to provide transport facilities for it. The competition also between motor omnibuses and electric tramways has become very acute. The latter especially have been forced to improve the facilities they offer. In particular they run at higher speeds. Recent specifications for tramcar equipment demand a running speed of 25 to 30 miles an hour, which is practically double that demanded before the War. The length of the cars has greatly increased, and so also has their seating capacity. It is therefore necessary to use larger electric motors. It is usual to specify for two motors for each car, each being rated at from 50 to 60 horse-power. In pre-War tramway motors the armatures used to run at 600 revolutions per minute; whereas they now run at 900 revolutions per minute; also instead of being totally enclosed they are now self-ventilated. One important result of these changes is that the motors are both smaller and lighter, although they can exert nearly double the power. The design of tramway controllers has also been greatly improved, the large currents being broken by a powerful magnetic 'blow-out.' These controllers are used by the London County Council, and at Edinburgh, Manchester, Glasgow, and Newcastle-on-Tyne.

THE annual general meeting of the Royal Meteorological Society was held on Wednesday, Jan. 19, and Sir Gilbert Walker was re-elected president. The Buchan Prize, which is awarded biennially for the most important original papers contributed to the Society during the previous four years, was presented to Mr. C. K. M. Douglas. Sir Gilbert Walker delivered an address on "The Atlantic Ocean," in the course of which he directed attention to the value, when studying the movements of the atmosphere, of an understanding of oceanic circulations. He described the conditions of temperature, salinity, and density revealed by recent measurements in the Atlantic down to a depth of 10,000 feet or more. These throw light on the general character of the oceanic circulation, and indicate that though prevailing winds may set up surface currents, they probably produce no significant effect at a depth exceeding 700 feet. Icy water from the Arctic, and especially the Antarctic, flows towards and even beyond the equator at great depths, and as the air temperature is largely controlled by that of the sea, variations in the general circulation may provide the explanation of some of the big seasonal changes which occur in equatorial as well as in temperate regions.

PROF. A. S. EDDINGTON, Gifford Lecturer for 1927, who has chosen for the subject of his course "The Nature of the Physical World," gave the first of ten lectures at the University of Edinburgh on Friday, Jan. 21, on "The Failure of Classical Physics." The Earl of Balfour, Chancellor of the University, presided. Prof. Eddington said that in these lectures he proposed to explain some of the results of the modern study of the physical world which give most food for philosophic thought, and to show how we have been led to think of the material universe in a way very different from that prevailing at the end of the last century. He would not leave out of sight the ulterior object which must be in the mind of a Gifford Lecturer—the problem of relating these purely physical discoveries to the wider aspects and interests of the human soul. These relations cannot but have changed since our whole conception of the physical world has radically changed. He is convinced that a just appreciation of the physical world as it is conceived to-day carries with it a feeling of open-mindedness towards deeper significances behind it, which may have seemed illogical a generation ago; near the end of the course he would try to focus that feeling and make inexpert efforts to find where it leads. Prof. Eddington then proceeded to a consideration of some of the revolutionary changes in our views of space and matter resulting from the new theory of matter originated by Rutherford, and from Einstein's theory of relativity. Further lectures of the course will deal with time as a fourth dimension, the running-down of the universe, gravitation, the quantum theory, the nature of the stars, inorganic evolution, world building, the domain of physical science, and science and mysticism.

DR. R. CAMPBELL THOMPSON, in a lecture on Jan. 18 at Bedford College for Women (University of London) on "Conceptions of the Cosmos in Ancient Babylonia," pointed out that it is impossible to deal with the subject from any but a theological point of view. The early Babylonian ideas, like those of all early peoples of whom we have knowledge, were influenced by their view of the supernatural and by their geographic environment. The beliefs of the early Sumerian inhabitants of Babylonia appear to have been adopted by their Semitic successors without much change. After an introductory sketch of their mythological system between the approximate dates of 5000 B.C. and 2000 B.C., in the course of which he pointed out the traces of Babylonian influence in the New Testament, Dr. Campbell Thompson described, with the aid of a diagram, the cosmos as conceived by the Sumerian and Semitic inhabitants of the land. The earth, which was of course limited to the land of which they had knowledge, was surrounded by the ocean, which was again encircled by an enclosing dam. The three heavens above, with the lower earth and Hades beneath, comprised the universe. The sun god emerging from the mountains of sunrise in the east ran his course across the firmament and entered the earth again by the mountains of sunset in the west. A pastoral people inhabiting a flat land naturally had their attention turned to the sky and its heavenly

bodies, and looked to them for omens. In the Babylonian cuneiform script, the sign for a god is the same as that for a star. Astronomical science, however, as opposed to astrology, developed at an early date. The Babylonian astronomers had sufficient knowledge to predict eclipses with some accuracy, though not the point from which they would be visible. Dr. Campbell Thompson illustrated his remarks by references to the creation and other myths preserved on the clay tablets which formed the libraries, and showed many beautiful slides both of the scripts and drawings. At the end of the lecture he delighted his audience by reading translated extracts from the Gilgamesh Epic on which he is at present at work.

SIR WILLIAM BRAGG'S discourse at the Royal Institution, delivered on Jan. 21, dealt with "Tyndall's Experiments on Magne-crystalline Action." In 1845, at the Royal Institution, Faraday made a great step forwards in the science of magnetism. He constructed a powerful electro-magnet; the core was formed from a link of a large chain cable and the heavy copper wire was wound for the occasion, because covered wire was not an article of commerce in those days. With this he showed that practically all substances have magnetic properties, and remarkable relations were found to exist between magnetic properties and crystalline structure. These results led to his conception of 'lines of magnetic force.' These lines he imagined to run not only through material substances when magnetised, but also through the space about a magnet; so that in his view it was possible to speak of the ether of space being magnetised and to measure its consequent energy. These discoveries of 1845 excited great interest and were widely repeated, extended, and discussed. Much work was done by Tyndall, whose results were interpreted by Faraday as supporting his own theories. Tyndall, however, preferred an interpretation, as did others of the same time, which laid much less stress on the part played by the ether and fixed attention on the material bodies concerned. In particular he subjected bodies to great pressure, and showed how their magnetic properties seemed to be changed thereby. The views of Faraday have now been wholly accepted; but all careful work has its value, and even in those days Tyndall was able by his discoveries of the effects of pressure to make a material advance in the geological interpretation of the planes of cleavage in the earth's strata. Quite recently the application of X-ray methods to the study of the crystalline structure of substances makes it possible to offer a more complete explanation of Tyndall's results. The effects of pressure are to rearrange the minute crystals which most ordinary substances contain; and so Tyndall's results form part, not so much of the branch of science for which they were intended, as for that which deals with the effects of stresses of all kinds in altering the internal arrangement and the properties of materials.

MR. E. BRUNETTI recently presented to the Department of Entomology of the British Museum (Natural History) a collection of some 60,000 speci-

mens of Diptera (two-winged flies) especially rich in Indian and North American material. The collection is the result, in part, of the entomological collecting done by Mr. Brunetti during the last forty years. The same Department has also received, under the terms of the will of the late Lieut.-Col. F. R. Winn Sampson, an important collection of insects of the group Scolytidæ (bark-beetles). The collection consists of some 11,000 insects and 1400 microscopic preparations, and the bequest includes a selection of books and pamphlets, and two microscopes. Accessions to the Geological Department include three interesting fossils of flying reptiles: the long-tailed group is represented by a specimen from the Lias of Württemberg; the short-tailed pterodactyls by an excellently preserved wing-skeleton from the Lithographic Stone of Bavaria, and by a slab with several scattered bones of a small form from the Middle Purbeck beds of Swanage. This last was found and presented by Mr. S. L. Wood, who also gave the remains of a turtle carefully pieced together, and some unusually complete jaws and teeth of *Ancodon*, an ancient cloven-hoofed animal, all collected by him from the Hamstead beds of Yarmouth, Isle of Wight. The Lower Devonian slates of Bundenbach have yielded most interesting fossils beautifully preserved in pyrites. To the valuable series already in the Museum, some new forms of starfishes, crinoids, and trilobites have been added. An important purchase agreed to was a collection of Ammonites, mostly preserved in pyrites, from various openings, now closed, in rocks of Bavaria and Württemberg corresponding to the Kellaways rock of Britain. There was also laid before the trustees a plaster reproduction of the most complete nest of dinosaur eggs found by the American Expedition in Mongolia; this has just been received from the American Museum of Natural History.

THE purchase has been approved for the Department of Minerals of the British Museum (Natural History) of a 9-kilogram mass of meteoric iron from Chile, probably belonging to the La Primitiva fall, remarkable for the large inclusions of the phosphide of iron and nickel, schreibersite; also specimens of twelve meteorites not hitherto represented in the collection; and a cast of the wonderful 688-kilogram ring-shaped meteoric iron of Tucson, Arizona. An interesting book purchased for the Museum Library is the very rare first edition of an account by Linnæus of his scientific expedition through the Swedish province of Skånen in 1749. This edition contained an expression of approval of the burning up of the top-soil, a custom of the inhabitants of Småland, and a practice to which Baron C. Hårleman, the patron of Linnæus, was strongly opposed. Hårleman had paid the expenses of the expedition, and he caused the withdrawal of the first edition of this work and the publication of a second without the offending comment.

MR. W. G. LOBJOIT, Controller of Horticulture at the Ministry of Agriculture, is retiring from that  
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honorary post, and Mr. H. V. Taylor has been appointed Horticultural Commissioner of the Ministry and chairman of the Horticultural Advisory Council.

At the meeting of the London Mathematical Society, at 5 o'clock on Thursday, Feb. 10, at the Royal Astronomical Society, a lecture entitled "Some Problems of Terrestrial Magnetism" is to be delivered by Prof. S. Chapman. Members of other scientific societies are invited to be present.

At its meeting in Philadelphia in December last, the Botanical Society of America elected Prof. Harley H. Bartlett, of the University of Michigan, as president, and Prof. Arthur J. Eames, of Cornell University, as secretary. The following were elected corresponding members: Prof. Erwin Baur, of the Agricultural High School, Berlin; Prof. Robert Chodat, of the University of Geneva; Dr. L. Cockayne, of New Zealand; Prof. V. Grégoire, of the University of Louvain; and Prof. W. Johannsen, of the University of Copenhagen.

At the monthly general meeting of the Zoological Society of London held recently, it was reported that the number of visitors to the Society's Gardens during the past year was 1,937,935, the receipts for admission amounting to £61,325, an increase of £2728 as compared with the figures for 1925. The numbers of visitors to the Aquarium during the past year was 436,327, the receipts for admission amounting to £17,242, an increase of £483 as compared with last year.

THE council of the Institution of Electrical Engineers has made the sixth award of the Faraday Medal to Prof. Elihu Thomson, of Boston, U.S.A., honorary member of the Institution, who is well known as one of the pioneers in the development of electrical engineering. It will be recalled that the Faraday medal is awarded by the council of the Institution not more frequently than once a year either for notable scientific or industrial achievement in electrical engineering or for conspicuous service rendered to the advancement of electrical science, without restriction as regards nationality, country of residence, or membership of the Institution.

DR. THOMAS NELSON records in the *Lancet* for Jan. 1 (p. 16) the after-results of the treatment of ten cases of tuberculosis by Mr. Spahlinger's methods in a London hospital. The cases were selected and treated by the late Dr. Latham about twelve years ago, and comprised one case of lupus, one case of spinal tuberculosis, and eight cases of pulmonary tuberculosis. The spinal case and one of the pulmonary cases cannot now be traced. The lupus case is still alive, but all the remaining seven pulmonary cases are dead—six of them within three years of the commencement of treatment.

A SLIGHT earth tremor was recorded at the Royal Observatory, Edinburgh, between 5.20 A.M. and 5.30 A.M. on Jan. 24. A message from Nairn to the Air Ministry also reported a slight earthquake at

about 5.20 A.M., and records of the shock were obtained at Kew and Plymouth. The Kew record indicated a distance of about 500 miles for the centre of disturbance, but the disturbance was of less intensity than the Herefordshire or Jersey shocks of last year. Messages from correspondents of the *Times* in various parts of Scotland state that earth tremors were felt in the Orkneys, Deeside, Perthshire, and Fifeshire.

NOTICES have been issued of the offer of three Beit Fellowships for Scientific Research in July next. These fellowships are tenable at the Imperial College of Science and Technology, and will probably be awarded for two years. Candidates must be graduates of a university of the British Empire, of European descent, and less than twenty-five years of age. The annual value of each fellowship is £250. Application forms must be returned to the Rector, Imperial College of Science and Technology, South Kensington, London, S.W.7, by April 19 next.

THE Government of the Province of Buenos Aires, Argentina, has just distributed vol. 5 of the collected works of the late palæontologist, Florentino Ameghino, dated 1916. The volume consists of papers, chiefly on fossil mammals, published between November 1884 and May 1889, but unfortunately the original place of publication is usually omitted. A general account of the mammal-bearing deposits of Monte Hermoso is reprinted from the Buenos Aires newspaper, *La Nación*, and there is an interesting address on the "Phylogenetic Evolution of Mammals," which was given in 1889 to the Argentine Geographical Institute.

At the first meeting of the eightieth academic year of the Pontifical Academy of the Nuovi Lincei, held in the premises of the Academy in the grounds of the Vatican and attended by his Holiness the Pope, Cardinals Merry del Val, Maffi, Vannutelli, and Ehrle, the two secretaries of the Academy, Profs. De Sanctis and Martinelli, and a number of members and others, the inaugural lecture by the president, Prof. Gianfranceschi, was followed by several papers on scientific subjects. At the conclusion of the session the secretary made preliminary announcements concerning the arrangements for the year and for the commemoration this year of the Volta centenary.

THE sixth annual report of the Industrial Fatigue Research Board contains details of the organisation, investigations, and researches for the year ending December 31, 1925, followed by an analysis of the work published by the Board up to date. The various reports issued during the last six years have been analysed and all the evidence relating to a particular problem collected into one section. The first section deals with the scope and methods of investigations, the second with hours of labour in various industries, the third with atmospheric conditions and lighting, the fourth with methods of work, and the fifth with miscellaneous points such as individual differences, learning and practice, human and mechanical factors in production. It is a very

useful compilation, and should prove a valuable guide to present-day research in industrial problems.

THE trans-Atlantic telephone service to towns outside London and to several of the American States was inaugurated on Saturday, Jan. 22, by the exchange of messages between the vice-chancellor of the University of Cambridge and the president of Harvard University, Cambridge, Mass. Mr. A. L. Lowell, of Harvard, spoke first; the Rev. G. A. Weekes, who replied from the Master's Lodge in Sidney Sussex College, recalled the fact that Harvard received its name from John Harvard, a student of Emmanuel College, Cambridge, nearly three hundred years ago. Sir Ernest Rutherford, and Dr. Peter Giles, Master of Emmanuel, also spoke to Mr. Lowell, while Mr. Moran, president of the Southern Atlantic Telephone Company, spoke from New Haven, Connecticut. The extended service now includes most towns within about 110 miles of London, and on the other side of the Atlantic the States of Maine, New Hampshire, Massachusetts, Vermont and Rhode Island, and Connecticut.

THE January issue of the *Marine Observer*, the monthly review of the Marine Division of the Meteorological Office, contains the first of a useful series of articles dealing with radio telegraphy and weather forecasting. The series previously appeared in the first volume of the *Marine Observer*, when articles on weather forecasting that had formerly appeared on the monthly weather charts were replaced and extended. The first chapters deal with observation, scales, and the drafting of reports. The practical information it supplies should be of use to many besides sailors. There is now a total of 500 ships regularly contributing observations to the Meteorological Office. Many of these make daily reports to 'all ships,' and the others are invited to do so with the view of each ship-master being in a position to make his own weather chart and forecast.

THE scientific staff of the Madras Government Museum "has had," says the Report for 1925-26, "to devote almost the whole of its time to investigations." Coins and bronzes have been catalogued, a guide to the flowering plants of Madras City and its immediate neighbourhood has been pushed forward, the littoral fauna of Krusadai Island has been surveyed, and the life-histories of local insects have been studied. This work has enriched the collections but has delayed the improvement of the exhibited series.

WE have received the new edition of Messrs. C. Baker's (244 High Holborn, W.C.1) catalogue of microscopes and accessory apparatus. The B.L.M. series of microscope stands has been extended and includes mineralogical models, and the prices have been drastically reduced. A new  $\frac{1}{8}$ -in oil immersion lens, N.A. 0.95, has been added to the series of objectives, which may replace the medium-power dry lens when oil-immersion high-power lenses are also being used, and is serviceable for dark ground illumination. A new series of eye-pieces has been computed by Lieut. Col. Gifford, "Gifford ortho-



chromatic," which are claimed to be an improvement both in field and in definition, the field being half as large again as with the ordinary Huyghenian type.

ANOTHER volume of "Alumni Cantabrigienses," compiled by the late J. Venn and J. A. Venn, is announced by the Cambridge University Press. It will complete the first half of the work and bring the biographical record of all known Cambridge men down to the year 1751.

MESSRS. Longmans and Co., Ltd., announce for early publication "Flame and Combustion in Gases," by Prof. W. A. Bone and Dr. D. T. A. Townend. The book will review the results of modern research and the present state of science regarding gaseous combustion and explosions. It will consist of five sections, dealing respectively with the principal discoveries from the time of Boyle to the end of the Bunsen era (1660-1880); ignition phenomena, flame propagation through explosive mixtures, detonation flame structure and temperatures; pressure development during gaseous explosions in closed vessels; the mechanism of combustion; and catalytic or surface combustion.

NOTICE is given that applications for the Government grant for scientific investigations for the present year must be received by, at latest, March 31, at the offices of the Royal Society, Burlington House, Piccadilly, W.1. The applications must be upon a printed form obtainable from the Clerk to the Government Grant Committee, c/o the Royal Society.

APPLICATIONS are invited for the following appointments, on or before the dates mentioned:—A de-

monstrator in bacteriology at University College Hospital Medical School—Prof. A. E. Boycott, University College Hospital Medical School, University Street, W.C.1 (Feb. 7). An assistant chemist under the Northern Coke Research Committee—Prof. Briscoe, Armstrong College, Newcastle-upon-Tyne (Feb. 7). A male medical inspector of factories—The Industrial Division, Home Office, Whitehall, S.W.1 (Feb. 21). A senior lecturer in anatomy in the University of the Witwatersrand, Johannesburg—The Secretary, Office of the High Commissioner for the Union of South Africa, Trafalgar Square, W.C.2 (Feb. 28). The Stevenson lectureship in citizenship in the University of Glasgow—The Secretary, University Court, The University, Glasgow (Feb. 28). A lecturer and demonstrator in organic chemistry in the University of Sydney—The Agent-General for New South Wales, Australia House, Strand, W.C.2 (Feb. 28). An assistant Government analyst in Nigeria—The Private Secretary (Appointments), Colonial Office, 38 Old Queen Street, S.W.1 (Feb. 28). A Director of Antiquities in Palestine—The Under-Secretary of State for the Colonies, Colonial Office, Downing Street, S.W.1 (March 14). A helminthologist at the Imperial Institute of Veterinary Research, Muktesar, P.O. Ritani, U.P., India—The Director, Imperial Institute of Veterinary Research, Muktesar, P.O. Ritani, U.P., India (March 15).

ERRATUM.—In NATURE of Jan. 22, p. 114, col. 2, line 20 ("The Life of a Nilotic Tribe"), for "effect" read "affect."

### Our Astronomical Column.

COMETS.—Mr. H. E. Wood, of Johannesburg, has telegraphed the following parabolic orbit of the new comet 1927 *a* discovered by Mr. T. B. Blathwayt.

$$\left. \begin{aligned} T &= 1927 \text{ Feb. } 12.720 \text{ U.T.} \\ \omega &= 228^\circ 52' \\ \Omega &= 18 \quad 40 \\ i &= 90 \quad 31 \end{aligned} \right\} 1927.0$$

log  $q = 0.02522$

An ephemeris deduced from these elements shows that the comet is unlikely to be seen in Great Britain, for it will remain below the horizon until April, and after that will only be above it in a bright sky. Its track lies through Scorpio, Ara, Telescopium, Pavo, Indus, Toucan, Phoenix, Fornax, Eridanus. It is nearest to the earth, 106 million miles, in mid-February. It should then be a conspicuous telescopic object for southern observers.

The Comas Sola object of Jan. 10 is probably a minor planet. Its approximate position on Jan. 29 will be R.A.  $7^h 51^m$ , S. Decl.  $3^\circ 14'$ . There is not yet sufficient material to hand to deduce the orbit.

A NEW REFLECTING TELESCOPE FOR EDINBURGH.—An article in the *Scotsman* of Jan. 11 contains the welcome announcement that the Observatory at Blackford Hill, Edinburgh, is shortly to obtain a large reflecting telescope of Cassegrain type, together with a spectrograph. The exact dimensions are not stated, but as it will be "at least as great as any other in this country," its minimum aperture may be

presumed to be 30 inches. The proposed field of work is stellar photometry and spectroscopy. The useful work that has been accomplished in these fields in recent years at Edinburgh gives rise to the hope of very important results being obtained when the new instrument is in working order. The article also gives an interesting sketch of the history of the Observatory, which started on Calton Hill about 1818, and was moved to its present site in 1889 as a result of the benevolence of the late Lord Crawford, who offered his valuable collection of instruments and books on condition that the State provided proper buildings and maintenance for them. The offer was accepted and the new department placed under the Scottish Office.

A LARGE SUNSPOT.—A large single sunspot which was seen with the naked eye was on the sun's central meridian on Jan. 19 and continued on the disc until Jan. 25. This is the third spot or group of spots large enough to be seen this year without telescopic aid. Other particulars are as follows:

No.	Date on Disc.	Central Meridian Passage.	Latitude.	Area.
3	Jan. 13-25	Jan. 19.3	$25^\circ$ N.	1/1100 of sun's hemisphere.

A number of other spots across the sun's disc and patches of bright faculae at the east and west limbs have been located with ease in small refracting telescopes 2 in. or 3 in. in aperture.