

News and Views.

THE president and council of the Royal Society decided at their meeting on February 18 to recommend for election into the Society the following fifteen candidates: Dr. J. A. Arkwright, Dr. E. J. Butler, Lieut.-Col. S. R. Christophers, Prof. F. J. Cole, Mr. A. C. G. Egerton, Dr. Ezer Griffiths, Mr. H. B. Hartley, Dr. H. Hartridge, Prof. G. B. Jeffery, Prof. O. T. Jones, Prof. W. C. McCullagh Lewis, Prof. E. A. Milne, Mr. L. F. Richardson, Mr. H. T. Tizard, Prof. R. S. Troup.

THE following have been recommended for fellowship of the Royal Society of Edinburgh: Prof. K. W. Braid (Glasgow), Prof. A. E. Cameron (Saskatchewan), Mr. R. T. Francis (Purley), Mr. J. D. Gardner (Edinburgh), Prof. J. G. Harrower (Singapore), Lieut.-Col. W. F. Harvey (Kasauli), Dr. S. R. Khastgir (Edinburgh), Dr. N. S. R. Lorraine (Hull), Mr. J. A. M'Bride (Glasgow), Very Rev. Dr. D. MacKichan (Edinburgh), Dr. D. C. T. Mekie (Edinburgh), Mr. J. A. Morris (Ayr), Dr. D. Patton (Glasgow), Dr. B. Prashad (Calcutta), Mr. J. A. F. Roberts (Edinburgh), Mr. W. H. C. Romanis (London), Colonel Sir Bruce Gordon Seton (Edinburgh), Prof. J. Small (Belfast), Dr. W. N. Stokoe (Edinburgh), Prof. G. H. Thomson (Edinburgh), Dr. J. Thomson (Glasgow), Mr. C. P. G. Wakeley (London), Mr. S. Williams (Glasgow).

A FURTHER stage in the development of the comprehensive scheme of irrigation for Egypt and the Sudan, forming a corollary to the work recently carried out at the Sennar Dam and described in the issue of NATURE of February 6, is detailed in the report, just issued by the Public Works Department of Egypt, relating the results of the mission despatched in 1920 to Lake Tsana, in Abyssinia, for the purpose of considering the possibility of converting the lake into an artificial reservoir. Lake Tsana is the source of the Blue Nile, which is controlled on the Gezira Plain by the Sennar Dam. The verdict of the mission is that the lake is eminently suitable for the purpose in question. The annual discharge during normal years is estimated at 3500 million cubic metres, and this is the amount that could generally be stored. But by certain engineering operations, including excavation of the rock sill at the outlet, it would be possible to increase the reserve storage to 8000 million cubic metres, which would be sufficient to meet deficiencies, if two seasons of low supply were experienced in succession. This reserve storage of 8000 million cubic metres, added to the annual supply of 3500 million cubic metres, would therefore give the reservoir a total effective capacity of 11,500 million cubic metres. The report estimates the cost of the work at £2,300,000, and it is indicated that the work could be completed without the necessity of establishing any permanent means of communication with the Sudan; but if a railway or road to Gedaref should be found necessary, an increase in expenditure would follow. The Abyssinian Government has regarded the matter favourably and given its co-operation in

the investigations. It is hoped, therefore, in view of the fact that the waters of the lake are of no service to the inhabitants for irrigation of its shores, while they would undoubtedly be of considerable value to Egypt and the Sudan, that the Abyssinian Government will grant at an early date the desired facilities for constructing the proposed regulation works.

THE Department of the Interior, United States Geological Survey, has just published the statistical summary of petroleum production and consumption for the year 1923, from the compilation of Mr. G. B. Richardson. In this memorable year all previous records for the output of crude petroleum in the United States, and, incidentally, for the world, were broken by the production in that country alone of 732,407,000 barrels of oil, constituting 72 per cent. of the total world's output for that year. This figure also implies a 31 per cent. increase on the output of the United States for the previous year, and was attained largely as the result of flush production from a number of rich pools, the maximum yield of which occurred during this year. The domestic production of the country was further augmented by imports of crude oil amounting to 82,015,000 barrels, thus creating a record total supply of oil in America of 814,422,000 barrels. Consumption, on the other hand, was less than domestic production, for the first time since 1914.

THIS extraordinary output of petroleum in 1923 created a serious phase of over-production and brought with it a corresponding slump in prices of crude oil and a depressed state of the oil industry generally, from which recovery has been slow. Since 1923 a considerable body of opinion has been expressed that that year's production of petroleum represented the 'peak' of the United States, and probably of the world, and some rather gloomy forebodings regarding the future of petroleum supplies have been voiced, both in the United States and in Europe. For many reasons there may be expressed some doubt on this point, though it is not denied that once the peak is definitely passed, the life of petroleum supply may be a comparatively short one at the present rate of consumption. On the other hand, the advent of a new pool comparable with any one of those responsible for the flush production of 1923 would quite possibly bring an annual total up to that of that particular year; and as there is no reason to suppose that the last 'bonanza' oil-pool has been found, there is still some hope that 1923 was not the 'peak-year' of either United States production or of that of the world.

A REFRIGERATOR which is claimed to be the only known contrivance for the continuous production of cold without the use of mechanical moving parts was brought before a large gathering at the Savoy Hotel in London, on February 23. The machine is being put on the market as the Electrolux Refrigerator (153-155 Regent's Street, London, W.1). It operates

on the Platen-Munters system, ammonia being used as the working fluid, and hydrogen is employed to keep the pressure uniform throughout the plant. A cylindrical iron vessel containing a solution of ammonia is heated, preferably electrically; the water vapour is condensed and runs back into the 'generator,' and the ammonia passes on, being condensed in a water-jacketed tube leading to the 'evaporator.' Here it descends over baffle plates and evaporates, producing a lowering of temperature of the 'evaporator' and non-freezing solution surrounding it, and so of the chamber which it is required to cool. Ammonia gas, with the hydrogen filling the plant, passes down the 'evaporator' to the 'absorber,' where it meets a weak solution of ammonia running under gravity from the 'generator.' The ammonia is absorbed and passes back to the 'generator' by an ingenious 'trap' actuated by the heating element, while the hydrogen released goes on again to the 'evaporator.' The whole apparatus is of iron and is sealed, and there are no mechanical parts to require attention. Small plants only were shown, but other models are being produced.

THE prevalence and danger of insect pests in connexion with the growing of cotton led the Department of Agriculture in the Tanganyika Territory in 1922 to establish rules concerning the cotton crop. Two of the rules provide for the uprooting and destruction of all cotton refuse remaining at the end of the cotton growing season. A leaflet entitled "What to do at the end of the cotton season and why?" has been issued recently to planters and native cultivators. The dangers and breeding habits of insect pests, such as the red cotton-stainer and pink boll-worm, are pointed out, and reasons are given for the rules prescribing the uprooting of cotton and the destruction of wild plants allied to cotton at the close of the season. 'Ratoon' cotton in Tanganyika tends to harbour such insect pests and provides a ready source of infection for the new crop in the succeeding season, for such 'ratoon' plants produce bolls much earlier than the plants of the new crop. Similarly, dead stalks and other refuse from the cotton crop, if not destroyed, harbour the pests during the period between crops. Weeds such as Hibiscus and trees like Bombax (*Eriodendron*) may also enable the pests to carry over from season to season. The leaflet thus advocates thorough cleaning up of all plantations, as early as possible, pointing out that the earlier the clean-up the longer will be the famine period for the insects. The leaflet is printed in English and in the native language.

SEASONAL forecasting in India has been developed for some years, and considerable progress has been made in the application of statistical methods to weather prediction. A memorandum on the probable character of the weather in north-west India in January, February, and March was issued last month by Mr. J. H. Field, Director-General of Indian Observatories. Out of four principal factors available, two are practically neutral; these are the December rains at Port Blair and the pressure at Seychelles in November and December. The December rains in

the western region were adverse, while the factor of rainfall at Seychelles in November and December and at Zanzibar in December was favourable. The seasonal change of the upper-air currents in northern India at a height of 3 to 5 miles above sea-level promises to prove of importance as observations accumulate; the prospect of winter rains from November to March for north-west India bears a close relation with the relative vigour of these high-level winds during the latter half of September and in October. The factor of the upper winds indicates a slight excess of precipitation. The final conclusion from all data available is that the winter precipitation, rain and snow, in north-west India is likely to be normal.

UNDER the title of "The Botanical Case for Evolution," the veteran palaeobotanist, Dr. D. H. Scott, writes entertainingly and instructively in the *Nineteenth Century* for February. Pointing out that the experience of plant-breeding, whether carried out by the cultivator or the experimenter, shows that species are often not unchangeable, he bases the case for evolutionary change in Nature upon the following grounds: (1) Classification and its recognition of affinity, most readily interpreted in terms of descent; (2) the fundamental unity of organisation throughout the living world; (3) the comparison of organs and structures in different groups of plants, which show us an organ functional in some species, useless in others, turned to fresh uses in yet other species, etc.; (4) the geological record, in spite of such 'abominable mysteries' as the sudden appearance of the flowering plants in the Cretaceous period. In his concluding remarks Dr. Scott quotes with evident sympathy from Witham of Lartington, the first to investigate the structure of fossils, who wrote in 1833: "To lend my aid in bringing from their obscure repositories the ancient records of a former state of things with the view of disclosing the early and mysterious operations of the Great Author of all created things will ever be to me a source of unalloyed pleasure." There can be little doubt that for Dr. Scott, too, it has been an unalloyed pleasure to attempt to disclose the "early and mysterious operations" in the history of the vegetable kingdom, and the result has been the great series of monographs, and still more the 'Studies' through which most of the present younger generation of botanists first make their acquaintance with the flora of the past.

THE anthropometric measurements made in the schools of England and Wales as a part of medical inspection are intended primarily as a test of physique and, except in a limited degree for specific purposes, or experimentally, their correlation with mental characters has not been attempted. The difficulty of any extended investigation of mental characters lies in securing uniformity in standard when anything involving a process which is not susceptible of a straightforward mechanical record is attempted. This difficulty vitiates to a certain extent some interesting investigations made by Dr. Arthur MacDonald of Washington, D.C., in which he has attempted to

correlate mentality with physical measurements. A summary of his results was given in the *Medical Times* for November. According to his figures, dolichocephaly both as an individual and as a racial character appears to be associated with dulness and unruliness; brachycephaly with brightness; further, that both dolichocephaly and dulness increase after puberty, while brachycephaly decreases. He also records some interesting and rather surprising results relating to the correlation of physique and individual history of disease in students. Dr. MacDonald's figures must be taken for what they are worth, and although based upon a large number of observations, his inferences should be accepted with reserve. He attributes to anthropologists some sweeping conclusions on head form which few would endorse without qualification. It is scarcely necessary to point out the value to educationists of research which would show a valid correlation between physique and mentality to be generally applicable, even on the broadest lines, and not confined to abnormalities.

THE latest annual report of the Bristol Museum and Art Gallery records the offer of Sir George A. Wills to provide an extension of the building on the recently acquired site of the old Drill Hall, at a cost not exceeding 75,000*l.* The offer, which was accepted "with intense gratification," provides for a new Art Gallery to the plans of Messrs. Frank W. Wills and Sons, the architects of the existing gallery. This will occupy a little more than one-third of the whole site; the present gallery will be devoted to ethnography and antiquities, again about one-third; while the remaining third will be entirely available for the natural history collections, except for the large lecture-theatre serving the whole. Important bequests recorded comprise a collection of foreign lepidoptera, formed by the late Mr. G. C. Griffiths; a collection of big-game heads and native weapons, from the late Sir William Garstin; and a collection of British and foreign birds and 120 Baxter and Le Blond prints, from the late Mrs. Dalton-Burgess. The fine collection of engravings formed by Mr. Heber Mardon and presented by deed of gift in 1919 together with his extra-illustrated copy of Nicholls and Taylor's "Bristol Past and Present," in fourteen large volumes, was handed over by the family on Mr. Mardon's death in 1925. All this has thrown much work on the staff, and it is the more satisfactory to note that the valuable geological collections of the Museum are being made more accessible than they have been for many years, and that important specimens have been brought to light. Alderman Eberle and Dr. Herbert Bolton are to be congratulated on a report that shows progress in every direction.

THE British Museum (Natural History) is issuing a remarkable series of picture postcards illustrating many of the most interesting specimens contained in the Museum collections. A particularly attractive set of these cards, lately published, includes selected representations of exotic butterflies, moths, beetles, homoptera, heteroptera, and orthoptera. The figures are admirably executed in colour, and each packet of

five cards (price 1*s.*) is furnished with an explanatory leaflet giving a concise account in general terms of the group or subject illustrated, and directing especial attention to any points of interest shown by the specimens represented. Thus, the letterpress contained in one of the packets devoted to butterflies gives a general account of the curious phenomenon of seasonal variation in these insects, and then proceeds to a brief but accurate description and discussion of the examples represented on the accompanying cards. These comprise figures, beautifully executed, of three striking African forms, in two at least of which, *Teracolus achine* (a "white" butterfly, or Piernie) and *Precis octavia* (a nymphaline allied to our Peacock and Red Admiral), the differences between the seasonal phases are so great that they were long held to be distinct species. Another packet contains excellent figures of some of the splendidly coloured Swallowtails of South America, and directs attention, in its accompanying notes, to the mimicry of other South American butterflies adopted by some members of the group. The brilliant colours exhibited by several of the grasshoppers, beetles, bugs, and moths represented in other packets will be a revelation to many whose acquaintance with these groups is only slight. These features are well brought out by the method of representation employed, and the claim of the Museum, that as much care has been taken with the figures as if they were destined to illustrate scientific monographs, is completely justified.

WE are informed that the Museum of Practical Geology, 28 Jermyn Street, S.W.1, is closed for repairs until further notice. Access to the Library and Offices of H.M. Geological Survey may be obtained through the entrance in Piccadilly.

PROF. KARL VON DEN STEINEN, Berlin, world known by his anthropological explorations in Central Brazil, and Baron Erland Nordenskiöld, of the Göteborg Museum, have been elected honorary members of the Paris Société des Américanistes.

DR. F. A. BATHER, keeper of the department of geology, British Museum (Natural History), has been elected a foreign member of Die Kaiserliche Deutsche Akademie der Naturforscher zu Halle. This is the oldest scientific academy in the world, having been founded in 1652.

WE learn from *Science* that a physico-chemical institute, to serve as central laboratories for scientific work in Spain, is assured by a gift of 40,000*l.* from the Rockefeller Foundation. The site of the building will be provided by the Spanish Government. It will probably be near the Museum of Natural Sciences in Madrid.

PROF. A. S. EDDINGTON will deliver the Bakerian Lecture of the Royal Society on May 6, taking as his subject "Diffuse Matter in Inter-stellar Space." The Croonian Lecture will be delivered by Prof. A. V. Hill on the "Laws of Muscular Motion" on May 20. On March 4, a discussion on "The Electrical State of the Upper Atmosphere" will be opened by Sir Ernest Rutherford.

THE Botanical Society of America, at its recent meeting in Kansas City, Missouri, elected the following corresponding members: Profs. A. Engler and K. Correns, of the University of Berlin; Prof. C. Sauvageau, of the University of Bordeaux; S. Nawaschin and Prof. R. Willstätter, of the University of Munich. Previously elected corresponding members are Profs. V. H. Blackman, F. C. Bower, Hugo De Vries, K. von Goebel, and A. C. Seward.

A MEETING will be held at the rooms of the Linnean Society on Wednesday, March 10, at 3.30 P.M., to consider a suggestion that the fifth International Botanical Congress should be held in London in 1930; and, in the event of the suggestion being adopted, to formulate an invitation to be submitted to the ensuing fourth International Botanical Congress at Ithaca, U.S.A., in August next. The Hooker Lecture of the Linnean Society will be delivered this year by Prof. Carl Schröter, foreign member of the Society, of Zurich, on April 15, and will be entitled "The Swiss National Park and Scientific Researches into its Nature."

THE Empire Council of Mining and Metallurgical Institutions, Cleveland House, 225 City Road, London, E.C.1, on behalf of ten constituent bodies, has accepted the invitation of the Canadian Institute of Mining and Metallurgy to hold the second Empire Mining and Metallurgical Congress in Canada in August-September 1927. It will be recalled that the first Congress, from which the Empire Council arose, was held at the British Empire Exhibition, Wembley, in 1924, under the presidency of the late Viscount Long of Wraxall.

THE Royal Academy of Sciences in Sweden has appointed a committee, consisting of Prof. Osten Bergstrand, of Upsala, Prof. C. V. L. Charlier, of Lund, and Profs. Karl Bohlin and V. Carlheim-Gyllensköld, of Stockholm, to organise the celebration of the 350th anniversary of the foundation of Tycho Brahe's "Uraniborg"—the city of the heavens. This magnificent observatory, famous in the history of astronomy, was built in 1576 on the island of Huen, which was granted to Tycho Brahe for life by Frederick II., King of Denmark. The island now belongs to Sweden.

IN the House of Commons on Thursday, February 18, Mr. MacDonald presented a petition at the request of his co-Trustees of the British Museum. The petition recited the capital holdings which the Trustees had and the income derived from the holdings, and stated that the income was not sufficient to enable the Trustees to carry out their trust efficiently. In conclusion, the Trustees asked for "further support towards enabling them to carry on the execution of the trust reposed in them by Parliament for the general benefit of learning and useful knowledge."

ON the initiative of the Orientalists' Association of Leningrad, it is proposed to hold the first International Exhibition of Buddhism at Leningrad in the autumn of 1926. The nucleus of the exhibition will be

furnished by the rich Buddhist collections of the Russian Museum of the Orientalist Association and of the Asiatic Museum of the Academy of Sciences. Japan, China, Tibet, Mongolia, and other countries will be represented. The Academy of Sciences has despatched Prof. Stcherbatsky to Japan and Prof. Alexeiev to China to collect exhibits.

IT is announced that further collections of objects discovered by Col. Kozlov in Mongolian mounds have been received at Leningrad. These include both Greek objects and objects of local manufacture showing Greek influence. Among the more remarkable are Greek fabrics and embroideries with designs of flowers, birds, and human figures in the Greek style. Particularly noteworthy is a piece of embroidery showing a group of horsemen. The Greek ornament and the Scythian dress, headgear, and harness of the horsemen suggest that the embroidery is derived from one of the Græco-Scythian settlements of South Russia.

THE Ella Sachs Plotz Foundation for the Advancement of Scientific Investigation was established in the first place for the encouragement of medical and allied research, grants being made for the purchase of special apparatus and supplies and preference being given to researches on a single problem. According to the second annual report recently issued, thirteen grants varying from 40*l.* to 340*l.* were made last year, four of which were for investigations on chronic nephritis. Five of last year's grants were to workers in Europe. Applications for grants for the year 1926-27 should reach the secretary of the committee of the Foundation at Boston City Hospital, Boston, Massachusetts, before May 15.

Two awards are announced in the January issue of the *Journal of the Franklin Institute*; the John Price Wetherill Medal to Mr. F. Twyman, London, and the Edward Longstreth Medal to Mr. T. Midgley, Dayton, Ohio. The award to Mr. Twyman is for the Hilger interferometer, which provides a simple and accurate method of locating and correcting imperfections in prisms and lenses. It will be recalled (*NATURE*, July 14, 1921, p. 635) that in this instrument a beam of monochromatic light is divided into two parts, one of which is passed twice through the object under test. The two beams are recombined so as to produce a set of interference bands which form a "contour map" of the imperfections of the optical element under test. The award to Mr. Midgley is for the Midgley optical indicator. This instrument is a high-speed indicator for use with internal combustion engines. A beam of light falls upon a mirror the position of which is determined by the position of the piston in the cylinder. The light is reflected to a revolving mirror the position of which depends on the second element required, and a pressure-volume or pressure-time curve can be obtained. Novel methods of reducing inaccuracies due to inertia of moving parts are adopted and the use of a spring and piston in the pressure element makes it possible to use a uniform scale for the entire height of the pressure card.

THE provisional programme of the Optical Convention, 1926, which has now been issued, shows that every effort is being made to ensure that the Convention will provide a comprehensive and complete survey of British contributions to optics in recent years, and of the position of optical science and the optical industry at the present time. The Convention will be held, under the presidency of the Astronomer Royal, at the Imperial College of Science, South Kensington, on April 12-17 inclusive. Scientific and technical papers, dealing with every branch of theoretical and applied optics, will be read and discussed, and special discourses will be given, including lectures of a popular character accompanied by demonstrations. The most modern types of optical instruments and apparatus will be exhibited by British manufacturing firms in all branches of the optical trade. There are also to be exhibits illustrating the results of recent optical research and the application of optical methods in the laboratory. Demonstrations and dramatic performances, incorporating various interesting optical illusions and projection effects, are being specially composed for presentation during the Convention. Particulars of membership of the Convention and forms of application may be obtained from the Secretary, 1 Lowther Gardens, Exhibition Road, S.W.7.

THE technical programme has now been issued of the sectional meeting organised by the Swiss National Committee of the World Power Conference to be held at Bâle on August 31-September 12 next. The work of the meeting will be divided into five sections dealing with the utilisation of water power and inland navigation, exchange of electrical energy between countries, hydraulic and thermal production of electrical energy, electricity in agriculture, and railway electrification respectively. Contributions will be regarded as

National Papers (presented on the initiative of a national committee or of a member of the International Executive Committee) or Reporters' Papers (prepared by general reporters appointed by the Swiss National Committee, summarising national papers presented before April 1 and emphasising definite aspects of the subjects discussed). Papers and discussions are to be published in a volume of proceedings. Communications for the British National Committee should be addressed to the Secretary, World Power Conference, 36 Kingsway, London, W.C.2.

H.M. STATIONERY OFFICE announces for publication at the end of the month a special edition of the "Nautical Almanac 1928" bound in cloth boards; the edition in wrappers is also available. The edition in cloth will be continued in future years if it is found to meet a public need. Both editions may be obtained from Mr. J. D. Potter, 145 Minorities, E.1.

APPLICATIONS are invited for the following appointments, on or before the dates mentioned:—A lecturer in pharmaceutical and general chemistry at the School of Pharmacy of the Pharmaceutical Society of Great Britain—The Secretary of the Society, 16 Bloomsbury Square, W.C.1 (April 12). A professor of zoology in the University of Calcutta—The Registrar, University of Calcutta, Senate House, Calcutta (April 12). An assistant lecturer in mathematics in the University of Leeds—The Registrar (April 21). A principal for the proposed University College for Hull—The Secretary to the Board of the College, Guildhall, Hull (May 1). Lecturers in historical geography and physical geography at University College, Reading—The Registrar. An honours graduate in physics as assistant under the British Research Association for the Woollen and Worsted Industries—The Secretary, Torridon, Headingley, Leeds.

Our Astronomical Column.

RECENT SUNSPOTS.—In our issue of February 20, p. 282, mention was made of the third appearance of a spot in south latitude 21° . When more fully on the sun's disc, it could be seen with the naked eye, and should therefore be included in the list of naked-eye spots, as follows:

No.	Date on Disc	Central Meridian Passage.	Latitude.	Area.
4	Feb. 13-25	Feb. 19.1	21° S.	1/2000

The spot was typical of a regular spot with well-defined filamentary structure of the penumbra and stable outline. It may be expected to return at least once again, though probably as a telescopic object only.

As noted last week, the great spot of January returned, but it was only about one-sixth of its previous size. It was accompanied, however, by a very extensive region of bright faculae, seen easily when near the sun's limbs with a small telescope.

Spot No. 3, which was on the sun's central meridian on February 15, decreased rapidly and was of less than naked-eye visibility by February 16.

THE TEMPERATURES OF THE PLANETS.—The issue of the *Physikalische Zeitschrift* for December 23, 1925,

contains a report by Dr. E. Schoenberg on the present state of our knowledge of the temperatures of the planets. For planets still in the gaseous state there is as yet no satisfactory theory connecting the radiation sent out with the temperature distribution, but for those having solid crusts, either with or without atmospheres, Milankowitsch in his recent book has provided a satisfactory theory, which the author reproduces in the earlier sections of his report. He then describes the radiometer measurements made during the past twelve years at the Lick and Arizona observatories, and gives as the most reliable values of the surface temperatures: Venus 45° C., Mars -15° C., Jupiter and Saturn -80° C., the value for Venus being somewhat doubtful, but the others much more trustworthy. Dr. Schoenberg concludes his report by describing a method he has devised, and already applied to the visible portion of the spectrum, for determining the density and temperature of the atmosphere of a planet at any depth below the visible surface, by photometric measurements of the twilight band at the terminator, his theory being that the brightness of this band is due to diffusion only, and not to absorption.