

News and Views.

At the anniversary meeting of the Royal Society, Sir Ernest Rutherford, the retiring president, announced that by an alteration of the existing statute regulating the election of fifteen fellows annually, and enacted in 1847, the number to be recommended for election in future would be seventeen. This new version of a particular statute takes us in retrospect to a very early period, namely, 1682, when it was decided that "Every person that would propose a candidate shall first give in his name to some of the Councill, that so in the next Councill it may be discoursed *viva voce* whether the person is known to be so qualified as in probability to be usefull to the Society. And if the Councill return no other Answer but that they desire further time to be acquainted with the gentleman proposed, the Proposer is to take that for an Answer". Repeal of this reading occurred in 1728, the substance of alteration being that persons for election should first be proposed at a meeting of the Society, approved by the council, and recommended by three members, at least one of them a member of council. Soon after (1730) there was another change, mention of council being omitted, the requirement being that every person to be elected should be proposed and recommended at a meeting of the Society by three or more members, and qualifications were necessary to be set forth. The several elections of individuals were by ballot, not immediate, but at intervals.

In 1830, no fewer than forty-two fellows, on a home list, were elected to the Royal Society between January and December (within these months, by the way, Charles Darwin and J. J. Sylvester were included). Only four foreign members were elected. In 1841 the astonishing total of forty-four individuals was registered for the fellowship, whilst not a single foreign member appears in the list. In 1847 the number elected dropped to twenty-three, a result indicative, one may surmise, of impending changes in the mode of entry. In 1848 a drastic alteration in the system of the annual election came into operation, due to the regulations adopted the previous year. Fifteen candidates were duly selected; actually there were fourteen persons only who took up fellowship in that year. The meeting was notable as being the occasion of the valedictory address of the Marquess of Northampton, who had served ten years as president. It was already known that the latter held strong objections to the innovation, and he did not fail to express them in the course of his address. We have referred above to the fact of the election of only fourteen individuals. The president stated that—"It is rather a singular circumstance, that, since our selection was made, one of the gentlemen whom we had chosen, Mr. Syme, should have withdrawn his name. . . . The possibility of occurrence of such a case had not arisen in the minds of the former council when the new rules were framed, but it may perhaps be considered next year whether it ought to be provided against, or whether it is likely to occur so seldom as not to require any special provision." It

is of interest to add that this "Mr. Syme" was James Syme, the eminent Scottish surgeon, to whom Joseph Lister had early acted as house-surgeon at Edinburgh, and whose daughter Lister afterwards married.

THE considerations which to-day bear upon the present slight increase in numbers admitted annually to the Royal Society may be briefly given; they are, however, recognised generally. The advance of science during the past half-century has provided new aspects and new fields of knowledge. In course of time it has led to an almost exclusive nomination from the lists of candidates of those (in various departments) who are comprised in the broad category of research workers attached to home and overseas universities; coupled, in lesser measure, with others who have entered industrial technical organisations where the exercise of expert training is required. The issues arising from the recurrent claims underlying specialisation have long occasioned serious thought. It has been stated that the council was able at one time to bring in annually a proportion at least of distinguished men outside the academic or professional sphere, whereby, it was claimed, a useful discriminating leaven and freedom from standardisation was maintained. Although the new enactment changes the existing situation in the annual election of candidates for the fellowship, it does not appear to involve abandonment or modification of the statutory provision of 1902, which, while it repealed an old rule for the election (at any time) of privy councillors, gave the council power to recommend to the Society for election, in alternate years, two persons who either have rendered conspicuous service to the cause of science, or are such that their election would be of signal benefit to the Society.

By 255 votes against 225, the House of Commons has confirmed the Government's decision to allow the Dyestuffs (Import Regulation) Act to lapse in January next. Sir P. Cunliffe-Lister opened the debate on Dec. 4 by moving an amendment to provide for its extension for five years; the matter, he said, raises grave national issues, and is not merely a question of free trade. The industry is in origin British, and it has already once been lost to German foresight and wisdom; that loss was, at the outbreak of War, about the greatest handicap with which we had to contend. Sir H. Samuel, while admitting the possibility that foreign competitors might make the purchase of certain dyes dependent on the acceptance of dyes of cheaper quality, and that by selling at low prices they could stop valuable work in research and development now being pursued in Great Britain, nevertheless found no reason why the measure should be extended; his views were, he said, based mainly on the report of the Dyestuffs Industry Development Committee, to the effect that the building up of a substantial dye industry under the protection of the Act has temporarily laid a serious burden on the user of dyes. The President of the Board of Trade, Mr. Graham, said that the problem on which the

Government had to pronounce was the balance of advantage, and they were satisfied that the dyestuffs industry could continue in perfect strength and safety. The fact that the industry is able to offer virtual guarantees concerning price and quality is an indication that the central part of the case for protection has gone. He could not bring himself to believe that the industry will either collapse or operate under very great difficulties, because there has been a considerable measure of concentration of production. He was advised that there may be an agreement or understanding between British and German producers, and that that agreement may well be independent of whether the Act continues or lapses.

MR. GRAHAM, in the course of his speech on the Dyestuffs Act, referred to a memorandum on the subject submitted by professors of chemistry in the universities of Great Britain, in which the fear was expressed that if the industry is weakened by the lapse of the Act, they would lose a great deal of the advantages of training in research and of the effort to link science and industry together. He replied that it would be the duty of the Government to see that research is fully safeguarded; he suggested, for example, the formation of a research association under the auspices of the Department of Scientific and Industrial Research. Until more is known as to the proposed method of implementing Mr. Graham's promise, no useful comment can be made. Sir John Simon said that everyone would agree that the Act has produced a very efficient industry, that it has very materially promoted research, and that it has done something to develop British science; he advocated some continuance of the Act pending an effective inquiry. Mr. Henry Mond said that dye makers would be perfectly satisfied if this suggestion were adopted. There are altogether 10,000 known dyes, some 4000 being in current use, and about 2500 are made in Great Britain. Extension depends on the supply of trained scientific workers, and it would be impossible to provide the necessary school for the purpose until there is a well-established and a sound organic chemical industry. The future of industry is based upon the organic chemical industry. Mr. Wise expressed disappointment that the Government had not taken the opportunity to review the whole position in regard to dyestuffs, continuing to give to this vitally important trade a measure of protection in a non-fiscal sense which would enable it to develop what is a key-industry, and using the occasion to acquire for the benefit of the community a much greater control over the operations of a tremendously powerful corporation. Major Tryon regretted that, at a time when so many great problems in the dyeing industry alone are unsolved, the work should be broken up and part of the staff disbanded; it would set back a great experiment in the infinite field of undiscovered science. The debate was concluded by the Secretary for War, Mr. Shaw; no one, he said, was against any reasonable expenditure on research needed for guaranteeing the safety of the country, but those who want research should pay for it.

No. 3189, Vol. 126]

THE commemoration in London of the centenary of the death of Simon Bolivar, whose name is written so large across the geography of South America, and who died on Dec. 17, 1830, has been organised by a committee of the diplomatic representatives of Bolivia, Colombia, Peru, Ecuador, and Venezuela, together with the Spanish ambassador and others. The programme is to include a requiem Mass in Westminster Cathedral on Dec. 17, and the laying of wreaths at the Cenotaph in remembrance of the British soldiers who fought in Bolivar's army, and at the statue of Canning, who was the first to recognise the free States of South America. A commemorative tablet will also be unveiled in Apsley House, where, in 1810, Bolivar, representing the *Junta Suprema* of Caracas, met Marquess Wellesley, Secretary of State for Foreign Affairs. The following day a dinner is to be given by the Latin American Society of Great Britain to celebrate Bolivar's achievements and the old friendship between Great Britain and the republics he liberated. Bolivar, who was born at Caracas on July 24, 1783, came of a noble family of Venezuela, and after being educated at Madrid visited France and the United States. By 1811 he held the rank of colonel during the struggle for the independence of Venezuela, and thenceforth he was associated with the efforts which led to the formation of the republics of Colombia, Ecuador, Peru, and Bolivia, the last of which was named after him. After holding the dictatorship of Colombia, he resigned office on Jan. 20, 1830, and died the same year at Carthagena on his way into exile. His grave is in the cathedral of Caracas, the capital of Venezuela.

THE second triennial congress which is being called by the International Industrial Relations Association at Amsterdam in August 1931 should meet under favourable auspices. The Association was formed for the study and promotion of satisfactory human relations and conditions in industry, and thus has aims allied to those of the Industrial Welfare Society. The congress will consider the need for scientific adjustment of economic resources, production, and consumption, as essential to satisfactory human relations and conditions in industry. The present widespread unemployment position and lack of purchasing power, at a time when the world's production capacity and economic resources are greater than ever, give pertinence to an attempt to determine whether scientific methods can be used to achieve some balance between resources, production, and consumption. Recent discussions at the British Association meetings on the rationalisation of industry have stressed the human aspects of rationalisation. In the scientific study of the management aspects of rationalisation which is being carried out by the International Management Institute, the human factor and industrial psychology receive due attention, and the subjects chosen for research have included the selection and training of workers, accident prevention, methods of remuneration, welfare devices, etc. The Industrial Health Research Board has also strongly advocated the need for closer co-operation between psychologists and industry; whilst the Committee on

Industry and Trade in its final report made recommendations for the scientific and practical investigation of the whole range of problems falling under the head of industrial fatigue, in the widest sense.

THE co-operation of scientific workers in this forthcoming congress is definitely invited, and the congress affords such workers an opportunity not merely of collaborating in the development of a technique of satisfactory human relations, including right working conditions, in industry, but also of assisting the formulation of economic policy, along the lines of knowledge in place of caprice or prejudice. The participation of scientific workers in such a congress with representatives of employers and of labour should at any rate assist in relating science to practice and practice to science. The important problem of securing national administration in economic and industrial matters along rational and scientific lines appears, however, to be rather outside the scope of the congress. Even the World Economic Conference of 1927 has thus far proved abortive so far as any real influence on Government policy is concerned. Once the management of industrial relations has been established on scientific lines, the international organisation and relationship of industry may exert a more decisive influence on national policy and administration, and scientific workers cannot be indifferent to a congress which holds any prospect of promoting the leadership of science.

A NOTEWORTHY recent lecture by Prof. R. Willstätter gives a searching analysis of the relations between fundamental scientific research and industry as seen in Germany at the present time. After stressing the debt of modern chemical industry to the scientific work of the universities, Prof. Willstätter analyses the activities of the industrial research laboratories, and pays tribute to the scientific merit of much of the development work carried out by such laboratories in fields which originally were opened up by purely scientific discoveries. The systematic investigation of a defined field—such, for example, as that of hypnotics, following on the discovery of veronal—to determine the substances possessing the most valuable combination of properties, even when carried out along lines of analogy, involves a high standard of scientific knowledge and frequently even more originality and inventive ability than the original and, possibly fortuitous discovery. Such developments are as much among the greatest achievements of chemical industry as the elaboration of methods of large scale production for the new substances, and the success of such work depends more than anything else on the director of research.

EVEN in the development of large scale production and the improvement of technique, industry has frequently been indebted to academic research, and Prof. Willstätter views with alarm the gradual estrangement between the large industrial firms and the universities which has developed with the growth of industrial organisations and the expansion of their research departments. There is not now the same personal contact between the universities and the leaders of

industry, and in some quarters there is a definite tendency to disparage or resent suggestions coming from the universities. This tendency has already had an adverse effect on the financial position of research at the universities, and Prof. Willstätter urges that a more generous policy on the part of the industrial combines and a close contact between industrial leaders and the universities is required to stimulate the fundamental scientific research from which industry itself benefits so largely.

IN an inaugural lecture delivered at the London School of Economics on Dec. 2, Prof. Morris Ginsberg, who has succeeded the late Prof. L. T. Hobhouse in the Martin White chair of sociology, reviewed the present position of instinct in the social sciences. He defended the conception of the instincts as inborn impulses serving the root interests or basic needs of the organism, of which they must be regarded as limitations or specifications. The attempt to reduce instincts to compound reflexes fails, first, since the component parts of instinctive behaviour admit of varied combinations in a series which as a whole has unity and continuity, and secondly, since no adequate account can be given of mental development on the basis of the reflexes alone and their conditioning. The function of intelligence in relation to instinct is (1) to clarify and render explicit the ends of the inborn impulses; (2) to detect relevant relations between the actual situation and the ends; (3) to systematise the ends of the impulses into comprehensive purposes. The objection to instincts as occult forces is based on a false view of causality, which properly interpreted does not imply any notion of mysterious efficacy. That no satisfactory classification of human instincts has yet been produced is true, but irrelevant as an argument against them. None of the critics has in the end succeeded in dispensing with the instincts. Proceeding to a survey of the use made of instinct in social psychology, Prof. Ginsberg showed that: (1) There has been too much readiness to refer highly complex phenomena to single instincts. (2) The instincts have been incorrectly conceived as separate 'forces', thus ignoring the conational continuity of the self. (3) Stress on impulse has led to a disparagement of reason; in truth, impulse and reason are inseparably intertwined. (4) The accounts which have been given of the psychology of morality, of the basis of social life, and of sublimation appear to require restatement in terms of a more adequate definition of the relation between the root interests and the specific impulses which serve them.

RECENT discussion of the antiquity of man in East Africa has served to direct attention once more to the importance of the 'Oldoway skeleton' found by Dr. Hans Reck in the northern part of Tanganyika Territory in 1914. The evidence, geological, palæontological, and anthropological, afforded by this discovery must now be viewed in the light of Mr. Leakey's work in Kenya. The data for such further consideration are furnished by a valuable study of the skeleton and the attendant conditions of its discovery communicated to the Royal Anthropological Institute by

Dr. Reck and presented at a meeting held on Nov. 25. The Oldoway geological series consists of seven horizons, of which the fifth is a fossiliferous bed in which were remains of a variety of *E. Antiquus*, previously known only from Europe and the Nerbudda deposits, and human remains. Above this was a red-earthy deposit, root-infested and therefore undisturbed. The skeleton itself was found only a little above the horizon of *E. Antiquus*. The bones were not highly mineralised. Dr. Reck is now inclined to correlate Oldoway man with Elmenteita man found by Mr. Leakey in Kenya; but he differs from Mr. Leakey on the point of chronology, on the ground that only one pluvial period is represented at Oldoway. He also holds that it is not yet possible to correlate the fauna with that of Kenya. Mr. Leakey himself, on the other hand, detects a non-conformity between the Oldoway sixth and fifth beds suggestive of a temporary land surface. He is inclined to equate the Oldoway bonebed with the upper part of his 'Gamblian'. It is evident that more field-work is necessary before any definite conclusion can be reached; but if Dr. Reck should be able to pay his projected return visit to Oldoway in Mr. Leakey's company important results may be expected to follow.

ON Dec. 5 the extension of the new spirit building of the British Museum (Natural History), which has been erected out of funds provided by the Empire Marketing Board for the use of the Department of Entomology, was formally opened before a large gathering of entomologists and others interested in the work of the Museum. Nearly four years ago the Board realised that the task of combating insect pests, the depredations of which so grievously hamper commerce either by directly attacking the raw material or the commodities resulting from it, or by injuring the health of the workers, was seriously impeded by the congested condition of the Department of Entomology, which rendered it impossible for the insect collection to be properly arranged and to be readily available for study. Accordingly the Board, in response to the request made by the Trustees of the British Museum, decided to devote an appreciable sum for erecting a suitable building, and in the end about £26,000 was expended. On consultation with the architects of the Office of Works it was decided to be preferable to add a permanent building rather than one which might have to be pulled down as the Museum expanded. For that reason about one-half of the west wing of the new building, which had been provided eight years ago for the collections kept in spirit, was added. It has been adapted to the use of the Department of Entomology: large windows have been pierced in what will eventually be the blank walls of the storerooms, and the mezzanine floors of those storerooms and one wall of the future corridor have been omitted.

THE proceedings were opened by the Director of the Museum, Dr. C. Tate Regan, who directed attention to the importance of insects in human affairs. He said that the collection of insects in the Museum numbers some six million specimens and has out-

grown its accommodation; the Empire Marketing Board took no narrow view of its duties and realised the intimate relation of the work of the Department of Entomology to health, agriculture, and commerce. Mr. Ormsby-Gore, M.P., who was chairman of the committee when the Board made the grant, emphasised the necessity for adequate scientific research in the development of the British Empire. The Archbishop of Canterbury, as chairman of the Trustees of the British Museum, expressed their thanks to the Empire Marketing Board and the Office of Works for their help, the value of which could not be exaggerated. The association between the Museum and the Government in the development of the Empire and its resources was appreciated. He hoped that the flow of fit persons would be quickened in the schools and universities to serve the Empire by research in every branch of science.

IT is easy to think of many ways in which the light sensitive properties of selenium can be utilised in the industrial world. When, however, an attempt is made to realise them in the research laboratory and later in the development department of a manufacturing works, many difficulties have to be overcome. We learn from the *Electrical Times* of Oct. 16 that the Radiovisor Parent, Ltd., of 26 Coventry Street, W.1, has surmounted many of these difficulties and perfected apparatus which is being employed commercially for various purposes. The most important application is to sound films. By means of a suitable electric bridge and an amplifier, it is now possible to give faithful reproduction of sound over the working range of frequencies. Another application is to the control of street lighting. There are some fifty street lamps in the Mortlake area, Surrey, which are controlled in this way, and they are also in use in several towns. Another application is a controller which regulates the lighting of clocks, telephone kiosks, signs, etc. Queensbury Church, a well-known landmark in Yorkshire, standing 1300 feet above sea-level, now has its four clock faces illuminated by electric lamps which are controlled automatically by a selenium unit. As selenium operates on both infra-red and ultra-violet light, it can be used as a burglar alarm. A special infra-red lamp is concealed and directs its beam across the object to be protected. Any interruption of the beam by the hand or body of an intruder instantly sets in action a warning device, either a red lamp or an alarm bell. Devices are made for indicating the presence of smoke in ships' holds. They are also officially recognised for the timing of racing motor cars and for dog racing. We understand that many other uses of the radiovisor bridge are being developed.

A LECTURE with novel demonstrations was given by Mr. Grace to the New York Electrical Society last month. It proved so interesting that it was repeated on three nights and very many people were unable to obtain admission. The first experiment was the 'projection' of speech directly into the human brain. This was done by transforming speech into a high

frequency current. The lecturer took hold of one electrode, his assistant held the other, and they placed their free hands against the ears of one of the members of the audience. The latter immediately heard music or speech, although no sound could be heard by any other person present. The explanation given was that the ear drums and surrounding tissues acted like the plates of a condenser receiver, the resulting vibrations of the ear drum due to electrostatic forces producing the sensation of intelligible sounds. Another experiment was the 'inversion' of speech. Ordinary speech was inverted so that the high notes became the low notes and vice versa. This inverted speech is quite unintelligible, but was reinverted into intelligible speech by suitable apparatus. In inverted speech, telephone sounded like 'play-o-fine' and company like 'crink-a-nope'. This method is already in use in transatlantic radio telephony to prevent unauthorised listeners from understanding the messages. Colonel Marshall, an engineer who had the misfortune to lose his larynx and had been provided with an artificial one, gave a short address to the audience from his home in California over the transcontinental telephone, on his method of controlling the floods in the valley of the Mississippi. A very successful demonstration was given of an ordinary carbon arc as a loud speaker. The method was originally discovered by Graham Bell, but hitherto the sound has been too faint. By using amplifiers, Mr. Grace made the talking arc almost as loud as the best modern loud speakers.

ON Dec. 4 a public lecture on "The Evidence of Astronomy and Technical Chronology for the Date of the Crucifixion" was delivered at Oxford by Dr. J. K. Fotheringham, reader in ancient astronomy and chronology in the University. Definite historical data, he said, limited the possible years to the period A.D. 27-34. Of these, the Jewish astronomical reckoning excluded all but the years 29 and 33. The year A.D. 29 was advocated by the late Prof. C. H. Turner, but Dr. Fotheringham gave reasons for dissenting from this view and also from that of the late Sir William Ramsay. He himself inclined to the date of April 3, A.D. 33, as offering fewer difficulties than any other. A point in his argument was the fact that the Jews reckoned the new moon from its first visibility; not from its astronomical position.

A NEW society has been founded in Paris for the scientific study of Africa. The president of the Society, which is to be known as the Société des Africanistes, is to be General Gouraud, and M. P. Lester will act as general secretary. Monthly meetings of the Society are to be held for the reading of papers, and a journal will be issued which, in addition to original memoirs, will contain reports of the proceedings at the meetings, notes and news on things African, and a bibliography of current literature on African ethnology. The Society will consist of patrons subscribing 2000 francs, life members subscribing 1000 francs, and ordinary members who pay an annual subscription of 50 francs, or if residing abroad 60 francs, with an entrance fee of 15 francs. Requests for further information and subscriptions should be addressed to

M. P. Lester, General Secretary, 61 rue de Buffon, Paris.

MR. P. H. GRIMSHAW has been appointed Keeper of the Natural History Department in the Royal Scottish Museum in succession to Dr. J. Ritchie, who has recently been appointed to be Regius professor of natural history in the University of Aberdeen.

PROF. WILHELM SCHMIDT took over the chair of geophysics in the University of Vienna and the directorship of the Zentralanstalt für Meteorologie und Geodynamik, Vienna, on Nov. 25. He succeeds Prof. F. M. Exner, who died on Feb. 7 last.

THE following appointments have been recently made by the Secretary of State for the Colonies to the Colonial Agricultural and Forest Services: Mr. A. J. Findlay, assistant director of agriculture, Nigeria, to be deputy director of agriculture, Nigeria; Mr. V. F. Olivier and Mr. A. F. W. Sheffield, to be superintendents of agriculture, Nigeria; Mr. P. A. Allison, Mr. A. F. Ross, and Mr. B. E. A. P. Urquhart, to be assistant conservators of forests, Nigeria.

THE Institution of Automobile Engineers has for some years past been giving advice to parents as to how their sons can enter the automobile industry. This practice has been elaborated, and information can now be obtained of the possibilities of apprenticeship in works in any particular neighbourhood. No charge is made by the Institution, the staff of which can be consulted by appointment, by writing to the Institution, Watergate House, Adelphi, London, W.C.2.

THE War Office announces that there are vacancies for commissions in the Supplementary Reserve of Officers as ordnance mechanical engineers in the Royal Army Ordnance Corps. In addition to qualifications as to character, medical fitness, nationality, etc., candidates must be less than thirty years of age for appointment as subalterns and less than thirty-five years of age for appointment as captains, and must also be fully qualified mechanical engineers. Preference will be given to bachelors of science (Engr.). Whitworth scholars, graduates, and associates of the Institutions of Civil, Mechanical, or Electrical Engineers. Candidates will not be required to undergo training in peace-time, but will be liable to be called out on service when the Army Reserve or any part of it is called out by Proclamation. In return for their obligation, officers will be granted an annual gratuity of £25, payable in arrear. Particulars can be obtained from the Under-Secretary of State for War (A.G.9), the War Office, London, S.W.1.

"EARLY Photomicrographers" is the title of an article by C. H. Oakden in Watson's *Microscope Record* for September (No. 21). The honour of being the first photomicrographer is ascribed to the Rev. Joseph Bancroft Reade (1801-1870), who in 1837 obtained prints of the image thrown by a 'solar' microscope upon paper treated with silver nitrate and infusion of galls, fixing the print with hypo made by himself.

IN the autumn issue of *Sunlight* (Vol. 2, No. 3), the journal of the Sunlight League, a table is given of the

average daily readings for August of the intensity of ultra-violet radiations at various localities in the British Isles. The figures illustrate the high intensity which these radiations sometimes attain in England, figures of about 8.7 being obtained at Cleethorpes and Lowestoft, and of 7.75 at St. Ives and Ventnor. They also illustrate how much the intensity of the radiations must depend on climatic conditions prevailing, for while the figure for Clacton is about 7.0, at Southend-on-Sea it was only 1.0—the lowest record of all stations. Among other articles, Dr. Kathleen Vaughan writes on the value of sunlight and the open-air life for healthy motherhood.

A SHORT list of nearly 300 books on British and foreign birds has been received from Messrs. Francis Edwards, Ltd., 83 High Street, Marylebone, W.1. It includes a few scarce items.

MESSRS. Wheldon and Wesley, Ltd., 2 Arthur Street, W.C.2, have just circulated a list (New Series, No. 23) of many second-hand works, classified under the headings of periodicals and publications of learned societies, miscellanea, zoology, botany, medicine, sport, and addenda. It is obtainable upon application.

WE have received from Messrs. A. Gallenkamp and Co., Ltd., a catalogue of apparatus for testing petroleum and its allied products. The list, which covers

52 pages and is well illustrated, covers nearly all the standard apparatus required for testing such materials, but the Tate specific gravity bottle seems to have been overlooked. The prices are all given.

APPLICATIONS are invited for the following appointments, on or before the dates mentioned:—Two inspectors of aircraft under the Union of South Africa—The Secretary, Office of the High Commissioner for the Union of South Africa, 73 Strand (Dec. 16). An assistant chemist at the sewage disposal works of the County Borough of Reading—The Town Clerk, Town Hall, Reading (Dec. 18). A head of the chemistry department of the Plymouth and Devonport Technical College—The Secretary for Education, Education Offices, Plymouth (Dec. 20). An inspector of alkali, etc., works, under the Ministry of Health—The Director of Establishments, Ministry of Health, Whitehall, S.W.1 (Dec. 20). A junior lecturer in the department of pathology of the University of Liverpool—The Registrar, The University, Liverpool (Dec. 24). A whole-time abstractor and translator at Sheffield, under the Safety in Mines Research Board—The Under Secretary for Mines, Establishment Branch, Dean Stanley Street, S.W.1 (Dec. 31). A professor of biochemistry at the Indian Institute of Science, Bangalore—Prof. F. G. Donnan, University College, Gower Street, W.C.1.

Our Astronomical Column.

Magnetic Disturbance, Dec. 3-4, 1930.—A considerable magnetic disturbance, falling into the category of a small storm, occurred on Dec. 3-4. The storm began with a characteristic 'sudden commencement' on Dec. 3 at 1½^h, but apart from this the oscillations of the needles were not appreciable until about thirteen hours later, the most disturbed part of the traces being between 15^h and 22^h on Dec. 3. The range in Declination at Greenwich was 51'. At the time of the storm there was only a smallish sunspot, of area 130 millionths of the sun's hemisphere, a little way past the central meridian. Spectroscopic observations, which greatly increase the range of detection and scrutiny of solar eruptions, were impossible owing to fog or overcast skies. The recent magnetic storm appears to be the largest since that of Mar. 11-13, 1929, though during 1930 a number of disturbances of somewhat lesser intensity have occurred.

Stellar Parallaxes.—*Scientia* for October contains an interesting paper by Prof. S. A. Mitchell, describing the remarkable advance that has been made in recent years in determining the distances of the stars. It is less than a century since Bessel found the distance of 61 Cygni; it was not until the present century that the work was placed on a reliable basis, and the probable error of a parallax reduced to about one-hundredth of a second. Prof. Mitchell states that about three thousand accurate parallaxes have now been found; his own observatory (the Leander McCormick) is the leader with a thousand parallaxes; each of these rests on some fifteen plates, taken at about five seasons six months apart:

Reference is made to Prof. Schlesinger's measures with the Yerkes refractor twenty years ago; since it was not a photographic telescope, yellow screens and isochromatic plates were necessary. The use of colour screens has the advantage of reducing the error

arising from the different colours of the stars, which cause difference in refraction; this difference is also reduced by taking all parallax plates near the meridian, and using only the parallax in right ascension. The systematic errors of the results of the leading American observatories were shown by Stromberg and van Maanen to be of the order of 0.003", which is the angle subtended by one inch a thousand miles away. Other methods have been devised for estimating the distances of objects too remote to show any parallax: spectroscopic parallaxes, the relation between period and absolute magnitude for Cepheid variables. Edgington's relation between mass and absolute magnitude, and the strength of the lines in the spectrum that are due to interstellar calcium; but all of these methods need a number of reliable parallaxes in order to calibrate the curves. Thus the spiral nebulae are distant millions of light-years, but this estimate is ultimately based on the parallaxes of stars that are only distant about a hundred light years.

Comets.—*Beob. Zirk.*, No. 42, contains observations of comets 1925 II. (Schwassmann-Wachmann) and 1927 IV. (Stearns) made during September and October with the large reflector at Bergedorf, by Dr. W. Baade. Their magnitudes were 17 and 17.5 respectively. These were taken at an interval of 5½ years after perihelion for the first comet, and 3½ years for the second. It will be remembered that the orbit of 1925 II. lies entirely between those of Jupiter and Saturn, its period being about fifteen years. There appears to be a fair prospect of its being observable round the whole of its orbit, which would be a new cometary record. 1927 IV. is affording a record of another kind. It is now outside the orbit of Saturn, and has probably been observed at a greater distance from the sun than any previous comet. Halley's comet was lost soon after crossing the orbit of Jupiter.