

## News and Views.

It is with widespread regret that the news has been received of the destruction of the non-magnetic research vessel *Carnegie*, and the lamentable death of Capt. J. P. Ault, captain of the vessel, physicist, mathematician, and leader of the expedition, whose magnetic surveys extending over all the oceans since 1909 are known throughout the maritime world. The vessel, a brigantine belonging to the Carnegie Institution of Washington, was refitted last year and equipped for oceanographic and meteorological work as well as for the magnetic survey, and was fitted with an auxiliary bronze petrol motor. She had since completed half of the projected cruise of 110,000 miles when, on Nov. 30, refilling petrol in Apia Harbour, Samoa, an explosion occurred resulting in her total destruction. No other member of the scientific staff of eight received serious injury, from the reports yet seen. The Carnegie Institution has furnished classic material relating to the magnetic variation, dip and ocean meteorology, from the previous expeditions of this vessel and her predecessor under the leadership of Capt. Ault. During this cruise, data have also been obtained of the electric condition of the atmosphere at different levels, of wind velocities by means of pilot balloons, of atmospheric refraction, the intensity of solar radiation, temperature and humidity lapse rates above the sea. In addition, much oceanographic data have been collected, numerous stations having been worked from top to bottom for temperature and salinity of the water, which will add to our present knowledge of the hydrodynamics of ocean currents in the North Atlantic and Pacific. The nutrient salts, phosphates, and nitrates, necessary for and usually limiting plant life in the sea, have been studied, and the amount of minute plants and animals—plankton—estimated by means of hauls with fine-meshed nets. The work was being closely followed by the Admiralties, meteorologists, and marine biologists of many nations.

REFERENCE was made in NATURE of Nov. 23, p. 814, to the press announcements of the award of the Nobel prize for physics for 1929 to the Duc de Broglie for his work on the undulatory theory of matter. This work was carried out by M. Louis de Broglie, a younger brother of the Duc de Broglie, and it appears that the award has been made to the former. Maurice François César, Duc de Broglie, it will be remembered, is himself a distinguished physicist who received the Hughes Medal of the Royal Society last year for his pioneer researches on X-ray spectra and secondary  $\beta$ -rays. Reverting to M. Louis de Broglie, it may be added that it was his work which led Schrödinger to his well-known equation which is the basis of attack of problems by wave mechanics. The first experimental verification that an electron behaves like a wave was made by Davisson, and Germer, who studied the scattering of electrons from a single crystal of nickel. They were working at the Bell Telephone Laboratories, Inc., New York, and reported their experiments in a letter which appeared in NATURE of April 16, 1927, p. 558; a more detailed statement

appeared in the *Physical Review* for December 1927. The experiments of Prof. G. P. Thomson and others on the subject were somewhat later, and different methods were adopted.

DR. A. B. RENDLE, who retires from the post of Keeper of the Department of Botany in the British Museum in January next, was educated at St. Olave's Grammar School and St. John's College, Cambridge, and entered the Museum in 1888. By this time the collections which had been transferred from Bloomsbury in 1880 had been arranged, but there was still much to do, and Dr. Rendle then and there began his interest in the public gallery and index museum, the exhibits in which have been mainly his work. His systematic studies deal mainly with Monocotyledons, Apetalæ, and Gymnosperms, on which he has published more or less continuously for the past forty years; but he has also done critical work in other groups, for example, Convolvulaceæ and Urticaceæ. He was appointed keeper in 1906 in succession to G. R. M. Murray, who retired through ill-health before he was fifty. During Dr. Rendle's tenure of office the Department has probably doubled in size in every way. He was elected a fellow of the Royal Society in 1909.

THE keepership of a natural history department usually carries with it a number of non-official obligations, and Dr. Rendle has taken a pleasure in entering into these to the full. Amongst other activities, after serving on the Council of the Linnean Society, he became botanical secretary from 1916 until 1923, and president from 1923 until 1927. During this last period, the Society was undergoing certain changes which might have made for difficulties with a less experienced president. For the period 1894–1906, Dr. Rendle was head of the Botanical Department at Birkbeck College, and has always taken an interest in the teaching of botany, academic and otherwise. He has been president of several societies—South-Eastern Union of Scientific Societies, South London Botanical Institute (almost from its start), Quekett Microscopical Club—and has been honorary professor of botany to the Royal Horticultural Society for some years. After J. Britten's death in 1924, he added to his many duties that of editor of the *Journal of Botany*. His principal works are "The Classification of Flowering Plants", of which Vol. 1 appeared in 1904 and Vol. 2 in 1925, and the "Flora of Jamaica", with the late W. Fawcett; this latter began in 1910, and it is to be hoped that Dr. Rendle will be able to complete it. After his long reign as keeper he will doubtless appreciate the botanical opportunities which a well-earned retirement brings.

MR. J. RAMSBOTTOM, deputy keeper of the department of botany since Nov. 1927, who succeeds Dr. A. B. Rendle as Keeper, entered the Department in 1910, after studying at Cambridge and Manchester. He was appointed to the section on fungi, which previously had not received the attention due to its importance. During the first part of the War, many

investigations were carried on in the Department, and later Mr. Ramsbottom was seconded to the War Office for service as protozoologist in Macedonia. His civilian days came to an end after about a year's service, and he was attached to the R.A.M.C.; he was mentioned three times in despatches and awarded the M.B.E. and O.B.E. The cryptogamic herbarium at the Museum has become more and more important since the War, and is likely to continue. Mr. Ramsbottom was president in 1924 and is general secretary of the British Mycological Society; he has been botanical secretary of the Linnean Society since 1923, and this year he is president of the Quekett Microscopical Club.

THE second of three windows placed in St. Ethelburga's Church, Bishopsgate, to the memory of the seventeenth-century navigator, Henry Hudson, was unveiled on Nov. 28 by Mr. A. Halsted, the American Consul-General in London. This window, like the first, is the gift of certain citizens of the United States. In it Hudson is shown exploring the Hudson River in the *Half Moon*, finding Red Indians welcoming his approach. His first voyage was made for a company of London merchants, and it was in St. Ethelburga's that Hudson and his crew made their communion on April 19, 1607, before going aboard. Nothing is known of him prior to that, but in the course of the succeeding years he made four voyages, first to Greenland and Spitsbergen, then to the coast of Novaya Zemlya, thirdly to the Atlantic coast of America, during which he explored the Hudson River a little farther than Albany, and lastly to Hudson Bay. He was not the discoverer of either the river, the straits, or the bay which bear his name, but he added much to the geography of North America. Preparing to return to England in the spring of 1611, a part of his crew mutinied, and Hudson with his son and seven others were turned adrift in an open boat, after which nothing more was heard of them. Like many other voyages, Hudson's were undertaken with the view of finding a northern passage to the East Indies.

DURING the recent meeting of the International Institute of African Languages and Culture, held in London, the members were entertained by the Government at a luncheon given at the Hotel Cecil on Nov. 28, when a large number of distinguished guests was present. The occasion was made notable by a speech from Lord Passfield, in which he paid a tribute to the value of anthropology in the administration of the affairs of a backward people. Every young man, he said, who goes out to take part in administrative work ought to receive very definite training in anthropology, and he went on to express the hope that the beginning which has been made in giving training of that kind may be increased and intensified. A pronouncement of so emphatic a character, coming from the head of the department in charge of the Dependencies in which the officers to whom he referred will have to carry on their work, cannot fail to stimulate the study of native institutions and intensify the interest taken in them by those who are preparing to enter the Colonial services.

It may not be inapposite to point out, however, that facilities for training probationers for the Colonial services have long been provided by universities and other educational institutions of Great Britain, which have repeatedly urged upon those in authority the desirability and, indeed, the necessity that administrative officers should receive a grounding in anthropology before taking up their duties. Prof. Westermann, a director of the Institute, in thanking Lord Passfield for his encouraging speech, pointed out the utility of such an organisation as the Institute to traders, planters, settlers, administrators, educationists, and missionaries in helping them to the solution of the problems with which they are surrounded. It is unfortunately only too true that while, as Prof. Westermann pointed out, the vital interest in Africa is the African, the whole aspect of his life is threatened by the white man's activity. It cannot be too widely realised that only a sympathetic and well-informed administration, with a policy based on a study of native custom, can solve the problems upon which depend the whole political and economic future of Africa.

COMMANDER R. E. BYRD on Friday of last week made a successful flight from the Bay of Whales on the Ross Barrier to the South Pole and back. He returned in the early hours of Saturday morning, having accomplished the distance of about fifteen hundred miles without mishap. On the return journey, a descent was made for refuelling at a depot of petrol which had been placed on the Barrier 400 miles south of his base. Details of the flight and Commander Byrd's discoveries are still lacking, but his course, if straight, must have been approximately that of Captain Amundsen in his sledge journey in 1911. In order to cross the lofty Queen Maud Ranges, Commander Byrd must have risen to more than 10,000 ft. At that altitude, if the weather was clear, he should have seen the unknown eastern edge of the Barrier, hinted at by Amundsen, and also the course of the Queen Maud Ranges to the south-east. Sir Hubert Wilkins is also in the Antarctic at his base at Deception Island, South Shetlands, where he is preparing for his contemplated flight westward along the Pacific edge of the Antarctic continent to the Ross Barrier.

WHILE it may be one thing to have proved an oil-field to be worth working from a commercial point of view, it may be quite another matter to exploit it successfully if questions of title to concessions, exploration and development rights, royalties, refining practice, employment of nationals, and so on, founded on insecure legal codes, are constantly raised at the slightest whim of governments. Such matters of higher policy, particularly in the case of companies operating in foreign territories, call for administrative ability of no mean order, and few, even within the oil industry, appreciate the extent of the diplomatic workings necessary, both at home and abroad, to secure uninterrupted operations. Instance the country inexperienced in oil production suddenly finding itself the possessor of newly discovered petroleum resources; in the general scramble for titles, probably exaggerated

optimism, and public dreams of quickly gotten wealth, a number of laws, loose in construction, impossible of rational interpretation, are passed; as time goes on and developments promise well, various conditions and petty restrictions are imposed, either with the view of diverting more money into the national exchequer, or of giving the government (more probably its favoured officials) active participation in the affairs of the company.

A KIND of communal possessive instinct is manifest, strengthened in proportion as the industry grows; the attitude of disinterested complacency at the pioneer stage, while the oil company was spending money and earning none, rapidly changes to one of mere tolerance and desire to profit the moment success is assured; the public is urged to protect its rightful interests; the cry of nationalisation of internal resources is raised, and everything done to make conditions as difficult as possible for the harassed company officials. Usually, the proportion of local staff employed is compulsorily raised until the company finds itself flooded out with superfluous, inefficient labour; then long and protracted negotiations are undertaken between government and executive to find a policy which will placate the former and yet make it possible for operations to continue on a paying scale. These are among some of the more complex problems pro pounded by immature oil legislation, and Sir Arnold Wilson was right when he stated in a paper read before the Institution of Petroleum Technologists on Nov. 12 that unsuitable laws retard, and good laws encourage, developments of the oil industry, especially in countries such as Central and South America, where the evils of defective law and inconsistent legislation have often had to be reckoned with by the concession hunter or lease-holder.

THE compound for which the handy abbreviation of 'S.U.P. 36' has fortunately been adopted, is the symmetrical urea of para-benzoyl-para-amino-benzoyl-amino-naphthol 3:6 sodium sulphate; it was introduced by McDonagh, in the belief that it would prove of value in therapeutics by stimulating the tissues of the host to overcome various acute microbial infections. R. M. Pearce (*Brit. Med. Jour.*, Oct. 12, pp. 663 and 831; 1929) has recently described its use in influenza: in a series of more than eighty cases, every alternate patient was given 0.005 gm. S.U.P. 36 intramuscularly when the onset had occurred within the preceding forty-eight hours, and a further dose of 0.0075 gm. if necessary on the fourth day. The uninjected cases served as controls. It was found that the duration of the pyrexia, of the headache and muscular pain, as well as the total duration of the illness, were about halved by the injection of S.U.P. 36. J. S. Hall (*ibid.*, p. 831; 1929) has also found it of value, in doses up to 0.01 gm., in a variety of conditions, including the severe vomiting of pregnancy, acute pyelitis, cystitis and mastoiditis, osteomyelitis and broncho-pneumonia in children. The compound, however, does not act as a preventive if injected when no acute infection is present. Further details of its action and uses are given in a little brochure published by The British

Drug Houses, Ltd., Graham St., London, N.1, who prepare the compound, manufactured by British Dyestuffs Corporation, Ltd., for medical use: it is issued ready for intramuscular injection in isotonic solution in ampoules or rubber-capped vaccine bottles.

THE maximum power which may be radiated by broadcasting stations was limited to a hundred kilowatts by the International Consultative Committee at the Hague Conference. An unfortunate consequence of this decision is that this enormous power is regarded by many as the standard which should be aimed at when constructing a national broadcasting station. Some of the European States which are now constructing broadcasting stations are proposing to use very high powers, notwithstanding that the use of crystal receivers is now dying out, and that the number of listeners using valve sets is rapidly increasing. So far as reception in Britain is concerned, there is little interference at present by foreign transmissions, but in the immediate future when more giant stations are constructed abroad trouble due to this cause will be serious.

IN the early days of broadcasting, both in Great Britain and abroad, the stations provided about one kilowatt to the aerial. According to the *Wireless World* for Nov. 27, Germany was the first country to increase the power of its stations. As other countries began to build transmitters the natural tendency was to equal or raise the four kilowatt standard set by Germany. Five and ten kilowatt broadcasting stations became quite common. Germany is now considering a scheme for installing new high-power stations in addition to the present transmitters, and proposes to combine them into groups. The lower-power transmitters will operate on the national wavelength in conjunction with a high-power station. If this scheme is adopted, the German transmitters will once more dominate Europe, and other States will be stimulated to follow the German example. As a rule, the higher the power of a station the more costly is its construction. It will be very difficult, therefore, to modify European broadcasting in the future should this become necessary, owing to an excessive number of high-powered stations.

DURING last year immense strides were made in the development of broadcasting in Japan. Six modern broadcasting stations have been opened, with the idea of bringing as many listeners as possible within crystal range of some station. The new stations are each rated at 10 kilowatts, and are housed in new buildings so as to leave the original transmitters still available in case of emergency. All call signs in Japan are given out in English, and consist of four letters commencing with J.O. and ending with K. For example, J.O.A.K. stands for Tokyo, and J.O.C.K. for Nagoya. The entire broadcast wave-length lies between 350 and 400 metres. We learn from *Electrical Communication* for October that the equipment of all the stations has been imported from England. Sendai (J.O.H.K., 389.6 m.) is the chief town in the north of the main island. It is here that Prof. Honda's laboratory for metallurgical research is situated.

Every physicist and electrician knows the important work that he has done in connexion with cobalt magnet steel, now known as 'K.S. steel', work that has proved a great boon to the designers of electrical apparatus. For listeners outside Japan this station is the most favourably situated. New Zealand has reported excellent reception. Owing, however, to the mountainous nature of the country, the signal strength from any station varies considerably with its locality. There are one or two large cities situated quite close to a broadcasting station where reception is sometimes very poor. It is probable, therefore, that it will be found advisable to supplement the present main stations by small relay stations of two kilowatt capacity, when the demand gets greater.

THE study of the habits and psychology of the great apes must always be of supreme interest for their human relatives. Such study in the Old World has been provided for by the French station at Kindia, in Africa, where the apes can be observed in conditions approaching those of their natural life and in a favourable climate. According to a *Daily News Bulletin* issued by Science Service, Washington, D.C., a similar station, in which natural conditions will be copied so far as possible, is to be created on a 200-acre plot near Orange Park, Florida, under the auspices of Yale University. This great scientific ape-breeding farm has been made possible by a gift of 500,000 dollars from the Rockefeller Foundation.

UNDER the Boiler Explosion Acts of 1882 and 1890, the Board of Trade is authorised to hold inquiries into explosions of steam boilers and steam apparatus in Great Britain, and 62 such inquiries were held during 1928. Some of the accidents resulted in injuries to persons, of whom seven died, and also in great financial loss. The explosions included accidents to marine and land boilers, steam pipes and valves, bakers' steam-heated ovens, economisers, drying cylinders, etc. At the beginning of the present year, during the severe frost in February, many explosions of heating apparatus took place, and those which occurred in churches, schools, and other institutions were the subject of inquiry. In every case it was shown that ice forming in the pipes had choked the system and that the safety arrangements had become inoperative. Explosions in private houses were reported in the Press at the time, and it is probable there were a large number of such failures. With the approach of winter, it cannot be too strongly impressed upon all who have charge of steam and hot-water heating systems that the safety valves or safety discs should be placed on the boilers themselves and not in the heating pipes at some distance away. Practically every accident to heating apparatus which has come to our notice would have been prevented had the safety appliances been so placed.

At a recent meeting of the New York Electrical Society, Mr. E. W. Stearns gave some particulars of the great suspension bridge now being built over the Hudson River, which will connect New York City and New Jersey. The bridge will be ready for use in 1932, and when completed will be by far the largest sus-

pension bridge in the world, having a span between the towers of 3500 feet. The two towers, each 635 feet high, will carry a weight in cables alone of 28,000 tons, the cables containing more steel wire than the next seven largest suspension bridges combined, the Brooklyn, Williamsburgh, Manhattan, Detroit, Philadelphia, Bear Mountain, and Poughkeepsie bridges. Made of steel wire with a tensile strength of 230,000 pounds per sq. in., each of the four main cables will contain 26,474 wires made up of 61 strands of 434 wires each. To squeeze the cables into circular shape a squeezing jack with hydraulic cylinders will be placed around the cable and this will bring a pressure of 400 tons to bear on the cable. Sufficient elasticity is incorporated into the design of the towers and the bridge to allow of a sag of ten feet, but the sag under normal loading will not be more than four feet.

THE twelfth of the series of the Rockefeller Foundation, New York, devoted to "Methods and Problems of Medical Education", is given up to articles by specialists in charge of "Departments and Institutes of Röntgenology and Radium Therapy". This is a very valuable compilation, and it appears opportunely when big movements are afoot for the development of radiology in medicine. The book is essentially a presentation of how this subject is dealt with the world over; the various departments and organisations are described in detail with lists of personnel and occasionally estimates of cost of running such departments. Such a publication has a twofold value. In the first place, the reader can gather the extent to which radiological methods are at present used in everyday diagnosis and treatment of patients; and in the second place, those who are concerned with the initiation or development of departments of this kind will have at their command a mass of information which should be of the greatest scientific and economic service to them.

AN account of the modern methods of fishery research as undertaken by the biological laboratories and fisheries institutes on the coast of the North Sea and Baltic is given in Lief. 12, Teil 1.e<sub>1</sub> (Fischereibiologie by W. Schnakenbeck) of Grimpe and Wagler's "Die Tierwelt der Nord- und Ostsee" (Leipzig: Akademische Verlagsgesellschaft m.b.H., 1928). After an introduction and brief historical survey, the author proceeds to describe the various nets, dredges and trawls in use for both fishes and invertebrates, including plankton nets and water bottles for the smallest organisms, and, for sampling the bottom, the 'grab'. The most important methods of research are then briefly noted, particularly age-determination and the marking of fishes, and the study of animal communities at the bottom in connexion with fish food, besides method of plankton research. There are good illustrations of the research vessels employed by the laboratories and institutes in Heligoland, Denmark, Sweden, Norway, Scotland, and England, also of the nets, dredges, water bottles, and grab, figures showing representative bottom communities and numerous maps and diagrams. The whole forms a useful introduction to methods of fisheries research.

THE Thomas Lowe Gray Lecture of the Institution of Mechanical Engineers will be delivered on Jan. 3 at 6 P.M. by Eng. Vice-Admiral R. W. Skelton, who will take as his subject "Progress in Marine Engineering".

LORD BLEDISLOE, president in 1922 of Section M (Agriculture) of the British Association and Parliamentary Secretary to the Ministry of Agriculture from 1924 until 1928, who has for many years identified himself with agricultural interests, has been appointed Governor-General of New Zealand in succession to General Sir Charles Fergusson, whose term of office expires early next year.

PROF. G. ELLIOT SMITH will deliver a lecture on Java in the Great Hall of University College, Gower Street, W.C.1, on Monday, Dec. 9, at 5.30 p.m. Prof. Elliot Smith visited Java last summer when, acting as one of two representatives of the British Government, he attended the Pacific Science Congress held at Batavia in May last. The lavish hospitality of his hosts gave Prof. Elliot Smith every opportunity of seeing whatever was worth seeing in their colony. He visited the principal sites of archaeological interest, saw something of life in the native protectorates, including the courts of the sultans, and also visited the island of Bali, interesting from the peculiar nature of its people, its culture, and its religious ceremonial. Prof. Elliot Smith's lecture will cover an attractive and, to the average Englishman, little-known field.

THE first S. M. Gluckstein Memorial Lecture of the Institute of Chemistry will be delivered by Dr. Leslie H. Lampitt at the Institute on Friday, Dec. 13, at 8 P.M. Dr. Lampitt has chosen for his subject "The Chemist and Commerce". The late S. M. Gluckstein, a director of Messrs. J. Lyons and Co., Ltd., read before the London and South-Eastern Counties Section in October 1927 a paper entitled "Chemistry and Dividends", in which he gave an account of the development of the chemical staff and laboratories of his company, illustrating the bearing of science, and particularly chemistry, on the management of a large industrial undertaking. The laboratory staff of the company is now 72 chemists and assistants, who are accommodated in the laboratories at Kensington, opened this year, of which Mr. Gluckstein, who died on Aug. 29, 1928, did not live to see the completion. In memory of the Director who had taken so great an interest in their work, the staff of the laboratory, of which Dr. Lampitt is the head, offered the Council of the Institute a sum of approximately £200 to administer this fund for the provision of an annual lecture, the purpose of which is to show the bearing of science on industry, particularly in various fields of chemical activity. The lecture will be open to members of other societies and to the public.

WE have received vol. 6 (1928) of the *Transactions of the Institution of Chemical Engineers*. This contains the presidential address of Sir Alexander Gibb on the economics of power as applied to chemical engineering, papers on magnetic separation, the com-

bustion of powdered coal, treatment of beet sugar factory effluents, fluid jets, electrodeposition of rubber, and several papers on drying.

FOR the hundred and tenth annual meeting in Davos of Schweizerische Naturforschende Gesellschaft a 'Festschrift' of some twenty articles was produced (B. Schwabe and Co., Basel). All the articles have a bearing on Davos and they are of a varied nature. Several are meteorological, one of them dealing with the intensity of the insolation. Others treat of the geology, flora, birds, and butterflies of the district. Two articles are descriptive of the research institutions of Davos and five treat of medical subjects germane to the district. The volume has a number of photographic illustrations.

THE International Baltic Geodetic Commission held its fourth session at Berlin in September last year. All the States adjoining the Baltic except Russia were represented. The proceedings are now published in *Verhandlungen der Baltischen Geodätischen Kommission* (Helsinki, 1929). The daily proceedings are recorded, and several of the more important papers are printed at length with maps. All of the States concerned provided papers on some aspect of their geodetic work, and several States, notably Denmark, contributed accounts with charts of the present state of triangulation. The next meeting of the Commission is to be in Copenhagen in 1930.

THE Department of Agriculture and Stock of Queensland has recently published a useful manual entitled "Pests and Diseases of Queensland Fruits and Vegetables", by Messrs R. Veitch and J. H. Simmons. This handbook supplies the want for a trustworthy account of the commoner pests of Queensland fruits and vegetables and, at the same time, provides a short introduction to the elements of entomology and plant pathology. It can be recommended as a good practical account of the subject and its value is much enhanced by sixty-one excellent plates, both black-and-white and coloured, which have been executed in Australia. The book bears the name of the Government Printer, Brisbane, 1929, but no price is stated.

THE International Society of Experimental Phonetics has arranged for the following official organs to be sent to its members at reduced prices: *Zeitschrift für Experimentalphonetik*, quarterly, 5s. (instead of 10s.); *Comptes rendus de la Société Internationale de Phonétique expérimentale*, annually, no charge; *Bulletin of the International Society of Experimental Phonetics*, annually, 1s.; *Sprachneurologische Mitteilungen*, quarterly, 4s. (instead of 6s.); *Archives Néerlandaises de Phonétique expérimentale*, annually, 6s. 7d. or 4fl. (instead of 5fl.); *Archiv für Psychiatrie u. Nervenkrankheiten*, 20 per cent reduction. All persons—as well as libraries, institutes, corporations, business firms, etc.—who are interested in experimental phonetics may become members of the Society. Only experimental phoneticians of acknowledged standing may be members of the council. Applications for membership, accompanied by the fee

of 10s., may be sent to the president, Prof. E. W. Scripture, 25 Howard Road, Coulsdon, Surrey, England.

MESSRS. Dulau and Co., Ltd., 32 Old Bond Street, W.1, have just issued Catalogue No. 172 of upwards of 2000 second-hand books of science classified under the headings of horticulture, plant collecting, herbals, and general botany; local floras; geology, mining, palæontology, etc.; ornithology; general natural history, including entomology, mammalia, fishes, invertebrata, mollusca, etc.

APPLICATIONS are invited for the following appointments, on or before the dates mentioned:—A lecturer in engineering at the Kenrick Technical College, West Bromwich—The Director of Education, Education Offices, West Bromwich (Dec. 14). A chemical laboratory assistant at the Royal Arsenal, Woolwich—The War Department Chemist, B.47, Royal Arsenal, Woolwich, S.E.18 (Dec. 14). Temporary inspectors under the Department of Agriculture for Scotland—The Establishment Officer, Department of Agriculture for Scotland, York Buildings, Queen Street, Edinburgh (Dec. 14). A part-time lecturer in mathematics at Birkbeck College—The Secretary, Birkbeck College, Fetter Lane, E.C.4 (Dec. 16). A Paterson research scholar in the Cardiographic Department of the London Hospital—The House Governor, London Hospital, E.1 (Dec. 17). A guide-lecturer and professional assistant at the Science Museum, South Kensington—The Director and Secretary, Science

Museum, South Kensington, S.W.7 (Dec. 21). An investigator at the Royal Aircraft Establishment for research work in connexion with the electro-deposition of metals—The Chief Superintendent, Royal Aircraft Establishment, South Farnborough, Hants (quoting A. 388) (Dec. 21). A permanent inspector under the Department of Agriculture for Scotland—The Establishment Officer, Department of Agriculture for Scotland, York Buildings, Queen Street, Edinburgh (Dec. 21). Two assistant entomologists under the Division of Economic Entomology of the Commonwealth Council for Scientific and Industrial Research, for work on the Buffalo Fly Problem—F. L. McDougall, Australia House, Strand, W.C.2 (Dec. 30). A principal of the Central School of Arts and Crafts, Southampton Row, W.C.1—The Education Officer (T.1), County Hall, Westminster Bridge, S.E.1 (Jan. 20). A resident research fellow at Lady Margaret Hall, Oxford—The Hall Secretary, Lady Margaret Hall, Oxford. A lecturer in geography at St. Mary's College, Strawberry Hill—The Principal, St. Mary's College, Strawberry Hill, Middlesex. A chief lecturer in the Electrical Engineering Section of the Engineering Department of the Halifax Municipal Technical College—The Principal, Municipal Technical College, Halifax. An evening lecturer in refrigeration at the Borough Polytechnic Institute—The Principal, Borough Polytechnic Institute, Borough Road, S.E.1. A temporary junior assistant for a Government Laboratory—Z. E., c/o Charles Barker and Sons, Ltd., 31 Budge Row, E.C.4.

### Our Astronomical Column.

**Solar Activity.**—The temporary revival of solar activity shown during the last few weeks has been continued by the recent appearance of two other large groups of spots. One of these was a big regular spot of about 1000 millionths of the sun's hemisphere, and was therefore a conspicuous naked-eye object. This spot was the return of a complex stream, No. 13 in the list given in NATURE, Nov. 9, p. 737. The other group (No. 15) represented a new outbreak in the place of No. 12. The following table is continued from the note in our issue of Nov. 9:

No.	Date on Disc.	Central Meridian Passage.	Latitude.	Max. Area.
15	Nov. 21–Dec. 4	Nov. 27.9	13° N.	900
16	Nov. 24–Dec. 6	Nov. 30.3	16° N.	1000

**Spectroheliograph at Greenwich.**—A spectroheliograph is being installed at the Royal Observatory, Greenwich. The instrument, which has been lent by the Mt. Wilson Observatory, is one of several constructed according to Dr. G. E. Hale's design in the observatory workshops at Pasadena. A description of this ingenious adaptation of the spectrograph, and the observations it is possible to make with it, will be found in various contributions made to NATURE by Dr. Hale during the past few years (see July 3, Supplement, 1926; May 14, 1927, p. 708; April 28, 1928, p. 676).

**Jupiter.**—Fourteen months ago Rev. T. E. R. Phillips announced the appearance of a series of small spots in the southern hemisphere of Jupiter which had such a high westward velocity that their apparent period of rotation was 9<sup>h</sup> 59<sup>m</sup>, the highest value on record. In *Circular* No. 79 of the British Astronomical Association, he describes some recent observations made by Mr. A. Stanley Williams at St. Mawes,

Cornwall. They refer to some spots on the south edge of the North Temperate belt, which have the abnormally short rotation period of 9<sup>h</sup> 48<sup>m</sup> 49<sup>s</sup>, indicating a rapid eastward motion on the planet's surface. There is, therefore, a difference of more than 10<sup>m</sup> between the rotation periods of the spots of 1928 and the present spots. It is further noted that spots in the same latitude as the present ones were seen in 1880, 1891, 1892. These also gave an unusually short period of rotation.

**Stellar Spectroscopy at Dominion Observatory, Victoria.**—The *Publications* of the Dominion Observatory, vol. 4, Nos. 12 and 13, contain two interesting researches on spectroscopic binaries. No. 12, by R. N. van Arnem, treats of the star  $\beta$  Cephei, which is of mag. 3.3, type B1. The period is 0.1904843 day. Treating the change in radial velocity as due to orbital motion, the orbit elements appear to have changed notably between 1919 and 1922. The semi-amplitude of the velocity range changed from 13.1 to 9.5 km./sec., the difference being eight times the probable error;  $a \sin i$  changed from 34,043 km. to 24,606 km. The symmetry of the velocity curve indicates that if the change in radial velocity arises from orbital motion the orbit is appreciably circular.

No. 13, by W. E. Harper, describes the orbits of two spectroscopic binaries of unusually high eccentricity. Boss 4177, mag. 5.72, type A<sub>0</sub>, has a period of 4.951 days and eccentricity 0.511; the semi-amplitude of the velocity range is 16.28 km./sec.; only one spectrum is visible. H.R. 7338, mag. 6.19, type A<sub>0</sub>, shows the secondary spectrum faintly; the minimum mass of the system is twice that of the sun, divided in the ratio 1.180 to 0.844; the period is 10.3932 days, and the eccentricity 0.520.