## News and Views.

WE have referred from time to time in these columns to the importance of scientific research in the development of the British Empire overseas and to the work in this connexion of Mr. L. S. Amery and Mr. W. Ormsby-Gore, Secretary and Under-Secretary of State for the Colonies respectively in the recent Conservative Government. That there is to be continuity of effort and to some extent of policy by the present Government appears probable from the speech made by Mr. J. H. Thomas in the House of Commons on July 12 last, in moving a resolution, which was agreed to, "authorising the Treasury, on the recommendation of a Committee to be appointed by the Secretary of State, to make advances, either by way of grant or by way of loan, to the Governments of certain Colonies, territories under his Majesty's protection, and mandated territories, for the purpose of aiding and developing agriculture and industry in the Colonies or territories and thereby promoting commerce with or industry in the United Kingdom". The resolution authorises the annual payment of not more than one million pounds, and Mr. Thomas has in mind a small but active committee to allocate the grants. An unexpended residue in any year will not be available in the succeeding year. Mr. Thomas thinks that speeding up colonial development will provide much useful work in Great Britain; indeed, the scheme is part of his plan for dealing with unemployment generally.

IN the discussion of Mr. Thomas's resolution, Mr. Amery specifically raised the question of scientific research, health campaigns, etc., and obtained an assurance from Mr. Thomas that nothing which could be called 'development' would be excluded. Mr. Ormsby-Gore also referred to this question, and stated that research undertaken under this resolution should be in relation to purely local problems or those affecting a group of colonies only and, as such, outside the purview of the Empire Marketing Board. Mr. Thomas stated that the risk of overlapping the work of the Empire Marketing Board has been foreseen, but he does not anticipate difficulty from this cause. Much was said during the debate about industrial development and little about scientific research, which is its necessary antecedent. Mr. Thomas has promised a small committee of "knowledge and experience". Obviously, the successful working of the scheme will depend almost entirely on the composition of this committee; we trust, therefore, that some members at least will have "knowledge and experience" of the prime necessity of scientific research in the development of tropical countries.

A LECTURE with demonstrations was given by Sir J. C. Bose on July 9 at the India Office, the Right Hon. Wedgwood Benn, Secretary of State for India, being in the chair. Sir J. C. Bose thinks that the mechanism of life can best be studied in the more fundamental and earlier form presented in plants. This can only be realised by exceeding the range of perception of our organs of sensation by means, for example, of his 'contraction recorder' which, it was stated, produces a magnification of fifty million times. Great as this is, it may be mentioned that, even before the advent of the thermionic valve, the combination of optical and electrical methods had exceeded this magnification, and that optical methods of recording exhibit superiority over mechanical means from the point of view of freedom from inertia, time-lag, and speed as well as magnification. An experiment was performed which included the chairman and the stem of a lupin plant in series with the secondary of a small induction coil; the interrupted primary current was gradually increased and the plant stem was found to bend before the human subject objected to the strength of the electrical stimulus. This does not necessarily show, however, that the plant was more sensitive than the human being; whereas the plant early exhibited locally unequal degrees of mechanical contraction as a result of electrolytic changes at the site of passage of an electric current, the human being experienced a sensation which, in the usually accepted terminology, involves a change in consciousness. A valve voltmeter or a thermo-vacuo junction included in the same circuit would have proved more 'sensitive' than either plant or animal.

IT is perhaps well to make it quite clear that the term sensitivity has quite a different connotation in physiology from that which it has in physics; it would thus appear that the so-called sensitivity of plants, for example, to light, gravity, and electrical, mechanical, and chemical stimuli, is of the purely physical type and must obviously remain so as long as we regard consciousness as the discriminating attribute between animal and plant. Other experiments of Sir J. C. Bose have led him to assign to plants nervous and cardio-vascular systems. One such experiment was demonstrated: the stem of a drooping lupin leaf was placed in a tube of water and camphor was added to the latter. The erection of the leaf in a jerky manner (responding just like a crinkled balloon to steady inflation) was presumed as evidence of the existence of a pulsatile organ in the plant causing the ascent of sap. A consideration of the purely physical action of camphor, for example, on surface tension would merit attention in this connexion. Seeing Sir J. C. Bose's demonstrations, it is impossible to question the occurrence of the phenomena he describes; but animal physiologists will not readily accept his interpretations. Sir J. C. Bose also showed pictures of the Bose Research Institute at Calcutta. It is to the co-operation of workers trained in this and similar institutes with the intellect of Britain that Sir J. C. Bose looks for the solution of the common difficulties of the two nations.

THE Devonport Pathological Laboratories of the Seamen's Hospital, Greenwich, together with a new Nurses' Home, were opened by their Royal Highnesses the Duke and Duchess of York on July 15. The

laboratory building is constructed of sand-faced red brick and stone from designs by Sir Edwin Cooper, the cost being defrayed out of a fund collected by Lord Devonport. The laboratories on two floors are placed around a central entrance hall and staircase. The lower floor accommodates two staff laboratories, a large preparation room fitted with boilers, hot-air and steam sterilisers, autoclave and serum inspissator, and the office, and at either end a large room is allocated as museum and library respectively. An animal house and a workshop are located in a short southern wing, and mortuary (with cold storage), post-mortem room, and class-room for operative surgery in a corresponding northern wing. The upper floor accommodates two staff laboratories with rooms for assistants, a biochemical laboratory with balance and dark rooms attached, and several smaller rooms for research workers. The flooring throughout is of wood block, except in the entrance hall; the working benches are of teak, and are supplied with water, gas, and electric current (light and power), and internal and Post Office telephones are installed in each laboratory. The equipment of centrifuges, incubators, microscopes, microtomes, and glass apparatus is very complete. Heating is by hot-water radiators supplied from the boiler-house near by, in which is also a gas incinerator for destruction of waste and infective materials.

IT is reported in the *Times* of July 15 that a charter for the constitution of trustees to administer the National Radium Fund and to provide for the duties of the National Radium Commission, has been granted by the Privy Council. The charter makes provision for the election of trustees of the radium and for an executive body to be known as the National Radium Commission. The trustees will hold all the moneys and buy therewith and hold radium for use by this Commission. The duties of the Commission will be to deal with the distribution and use of all radium held by the trustees, having regard to the advancement of knowledge and economy of use; and to approve plans for the use of radium for medical treatment and research. It is thus seen that the duties of the Commission are wide ones and the granting of this charter marks a very important phase in the development of radiology in Great Britain.

UNDER the auspices of the Beaux Arts of France, and with the concession granted by the French Republic to dig at Combe-Capelle in a remarkable Moustierian site, Dordogne District, the Canadian School of Prehistory has just opened its season for 1929, headquarters being at the classic site of Les Eyzies de Tayac. The season of 1928 proved so fruitful in results that the School was enabled to install in several museums of the universities of Canada collections illustrating the activities and industries of early man from the Ipswichian (pre-Chellean) to the Robenhausian Period. Of the problems remaining to be solved in the Moustierian Period, the Canadian School was fortunate enough to obtain evidence in four distinct zones below the "Vieux Moustierien" of the classic section of Le Moustier, which add new information to the facts already known with respect to Moustierian man (Neanderthal). After careful inspection of all the collections made by the Canadian School in France by the Administrator of the Beaux Arts in the Dordogne District (M. Peyrony), the Laboratory of Geology and Palæontology at Ottawa, the School's headquarters in Canada, was further replenished with about 8000 specimens for distribution.

THE School in 1928 visited many of the sites of the Dordogne, Charente, and Pyrenees sections of France, under the guidance of M. Peyrony, Count Begouen, Dr. Henri Martin, Abbé Breuil, and others. By special invitation to visit and explore the Neolithic site of Ryckholt (Ste. Gertrude) in the highlands of Holland, the Canadian School was able to add an excellent series of specimens to its collections for Canadian universities. A movement is now on foot in Canada to incorporate by Act of Parliament the Canadian School of Prehistory, with the object of backing up the work that has been done and is being done by the School in France. The movement is led by Dr. E. R. Cameron, K.C., of the Supreme Court, and a number of leading archæologists and ethnologists of the Dominion. One of its chief objects will be the investigation of prehistoric sites in the northern districts of Canada where the Eskimos and the reindeer, with the musk-oxen, great stag, and bisons, are found to-day, all well-known types of life which once lived in south-western France in Magdalenian times. The Canadian School welcomes visitors to the site at Combe-Capelle where the excavations are going on, and especially those from the British Isles and other parts of the Empire interested in prehistory.

THERE is a demand for radio telephone sets by owners who can pilot their own aeroplanes. The sets used by commercial aircraft are much too heavy for light aeroplanes. The transmitter must have a range of at least fifty miles when communicating with the ordinary aerodrome ground station and a hundred miles when communicating with a large station like the one at Croydon. The Marconi Co. has now designed a set to meet these requirements. It combines a telephone transmitter and receiver in a compact wooden box the dimensions of which are only 16 in. by 9 in. by 7 in. Its weight, including that of the wind-driven generator, accumulator, aerial and connecting leads, is only 60 lb. The set has been designed for the transmission of telephony only. Pilots have quite enough to do in flying their machines and watching their instruments without the added labour of interpreting telegraph signals in the Morse code. The set may be installed for operation by the passenger or it may be fitted in any convenient part of the aeroplane and operated by the pilot through a 'remote control'. In the latter case there is only a one-handle manipulation. Seeing that private air cruising on business and pleasure is rapidly becoming popular, we welcome this device. Advice regarding the state of the weather and the conditions at the various aerodromes will now be available to light aeroplane tourists. In addition, they will now have a valuable means of position finding when flying over parts of the Continent and other places where there are aerodrome

ground stations fitted with direction finders. We hope that the international regulations enforcing adequate radio facilities on commercial aircraft will now be enforced on privately owned aeroplanes.

IN August next the *Discovery* will set out once again on a voyage of exploration and scientific discovery to the Antarctic continent. The enterprise, which is under the leadership of Sir Douglas Mawson, is being sponsored by the British, Australian, and New Zealand Governments, and considerable assistance in money and kind has been given by private individuals and firms, both in England and Australia. Mr. MacRobertson, a wealthy manufacturer in Melbourne, has contributed £10,000 to the funds of the Expedition, and several other private subscribers are assisting, but no general appeal to the public is being made for funds. The *Discovery* is now being overhauled at the West India Docks, and is being fitted with all the essential scientific gear that the forthcoming expedition makes necessary. Capt. J. K. Davis, who has been lent by the Government of the Commonwealth of Australia, has been appointed master, and will also act as second in command of the expedition. He was associated with Sir Douglas Mawson in a similar capacity on the pre-War Australasian Antarctic Expedition and has special and extensive experience in the Antarctic coastal and pack-ice waters. The scientific personnel and crew will number about forty. The vessel will carry an aeroplane with floats for rising from and alighting on the sea (where open water makes this possible), and alternatively will use a ski undercarriage for use on ice or snow. The aeroplane will be used for scouting, for photographing the coast-line, and for general purposes as a 'long arm' of the expedition. The ship will be equipped with powerful deep trawling gear and with echo-sounding apparatus. Both long-wave and short-wave wireless equipment will be carried. The expedition will carry out hydrographic survey work, and will study meteorological conditions with the view of discovering any relationship between those conditions and the climate and weather of Australia. It will also carry out investigations of the fauna, notably whales and seals, of the region explored.

DR. WILLIAM HUME-ROTHERY has been elected to the research fellowship in metallurgy of the Armourers and Brasiers' Company in succession to Dr. Constance F. Tipper.

THE Autumn Lecture of the Institute of Metals will be delivered during the forthcoming Düsseldorf meeting on Sept. 5 by Mr. A. G. C. Gwyer, who will speak in German on aluminium and its alloys.

THE following appointments have recently been made to the Imperial Bureau of Soil Science: Scientific assistant, Mr. A. J. Lloyd Lawrence; assistant for translations, Miss H. Sherbatoff.

MR. H. T. TIZARD, permanent secretary of the Department of Scientific and Industrial Research, has been appointed rector of the Imperial College of Science and Technology as from the beginning of September in succession to Sir Thomas Holland.

WE learn from Miss C. J. Vivian, 4 Dolcoath Road, Camborne, Cornwall, that a vigorous tremor was experienced at about 7 P.M. on July 7 in various parts of Camborne. In a church at Penponds, near Camborne, the vibration was so intense that the rafters creaked audibly. Old tin-mine workings undermine a part of the town, but a subsidence of the soil due to this could scarcely cover the district affected.

THE following have been elected officers for the session 1929–30 of the British Institute of Radiology incorporated with the Röntgen Society—*President:* Mr. C. Thurstan Holland; *Past Presidents:* Sir Humphry Rolleston and Dr. G. W. C. Kaye; *Vice-presidents:* Sir William Bragg, Mr. L. A. Rowden, and Major C. E. S. Phillips; *Honorary Treasurer:* Mr. D. B. McGrigor; *Honorary Secretaries:* Dr. Stanley Melville and Dr. G. Shearer; *Honorary Editors:* Dr. G. W. C. Kaye and Mr. R. J. Reynolds.

THE annual report and accounts for 1928 of the Ross Institute and Hospital for Tropical Diseases, Putney Heath, S.W.15, has been issued. The Institute was founded primarily to carry out research work in the prevention and treatment of tropical diseases, and is supported entirely by voluntary contributions. An account is given of the visit of Sir Malcolm Watson and Major Stevens to India and Ceylon for the purpose of advisory and propaganda work on malaria, and of the research work carried out in the Institute.

APPLICATIONS are invited for the following appointments, on or before the dates mentioned:—A head of the Engineering Department of the Leicester College of Technology—The Registrar, College of Technology, Leicester (July 22). An assistant county agricultural organiser under the Hampshire Agricultural Education Committee—The Agricultural Organiser, 82 High Street, Winchester (July 24). A head of the Mechanical Engineering Department of Robert Gordon's College, Aberdeen—The Secretary and Registrar, Robert Gordon's College, Aberdeen (July 29). An assistant lecturer in physics in the University of Leeds—The Registrar, The University, Leeds (July 29). A lecturer in pharmacy in the Department of Chemistry of the Witwatersrand Technical Institute—Messrs. Chalmers and Guthrie, Ltd., 9 Idol Lane, E.C.3 (July 31). An assistant lecturer in the Department of Chemistry of the University of Birmingham—The Secretary, The University of Birmingham (July 31). A superintendent of the Burma Civil Veterinary Department—Secretary to the High Commissioner for India (General Department), 42 Grosvenor Gardens, S.W.1 (Aug. 4). A lecturer in physiology in the University of Birmingham—The Secretary, The University, Birmingham (Aug. 5). A demonstrator in civil and mechanical engineering in the Department of Engineering of the University of Leeds—The Registrar, The University, Leeds (Aug. 5). Two timber assistants for the Utilization Forest Circle, Commercial Concern, Burma—The Secretary to the

High Commissioner for India, General Department, 42 Grosvenor Gardens, S.W.1 (Aug. 10). A lecturer in mineralogy and petrology in the University of Reading—The Vice-Chancellor, The University, Reading (Aug. 14). An assistant plant pathologist under the Department of Agriculture and Forests of the Sudan Government—The Controller, Sudan Government London Office, Wellington House, Buckingham Gate, S.W.1 (Aug. 15). An assistant superintendent in the Archæological Survey Department of the Government of India—The Secretary to the High Commissioner for India, 42 Grosvenor Gardens, S.W.1 (Aug. 17). A professor of geology and mineralogy in Rhodes University College, Grahamstown—The Secretary, Office of the High Commissioner for the Union of South Africa, South Africa House, Trafalgar Square, W.C.2 (Aug. 31). A research assistant in the Colour Chemistry and Dyeing Department of the University of Leeds—The Registrar, The University, Leeds (Sept. 2). A professor of clinical pathology in the Egyptian University, Cairo—The Dean, Faculty of Medicine, Egyptian University, Cairo (Sept. 15). An assistantship in natural history—The Secretary, University College, Galway (Sept. 21). An assistant director of the Technological Library of the Indian Central Cotton Committee, Bombay—The Secretary to the High Commissioner for India, General Department, 42 Grosvenor Gardens, S.W.1 (Sept. 29). Part-time lecturers in market research and sales management at the Polytechnic, Regent Street—The Director of Education, The Polytechnic, Regent Street, W.1. A head of the pathological division of the Rubber Research Institute of Malaya—The Secretary, London Advisory Committee, Rubber Research Institute of Malaya, 2-4 Idol Lane, Eastcheap, E.C.3. A lecturer in mathematics at the Gordon College, Khartoum—The Controller, Sudan Government London Office, Wellington House, Buckingham Gate, S.W.1. A full-time chief instructor of the Printing Department of the North-Western Polytechnic, Prince of Wales Road, Kentish Town—The Secretary, North-Western Polytechnic, Prince of Wales Road, N.W.5. An assistant master to teach mathematics in the Junior Technical School for Boys of the Woolwich Polytechnic—The Principal, Woolwich Polytechnic, S.E.18. A teacher of telephony in evening classes at the Woolwich Polytechnic—The Principal, Woolwich Polytechnic, S.E.18. A chief officer for the Imperial Agricultural Bureau for Plant Genetics: Herbage Plants—Prof. R. G. Stapledon, Agricultural Buildings, Aberystwyth.

## Our Astronomical Column.

**July and August Meteors.**—Mr. W. F. Denning writes: "The season for meteoric abundance has now opened and a large number of showers are visible, including the early phase of the great Perseid display. The latter appears to be visible during the whole of July and August with a maximum on Aug. 11 or 12. Probably the morning of the latter is the period when most meteors will be visible. The present year seems likely to be favourable for the occurrence of many meteors, for an abundant maximum of 250 per hour for one observer was counted in 1921 on the early morning of Aug. 12. The earth will occupy very nearly the same position in its orbit on the morning of Aug. 12 next, and the shower may be repeated if the density of the part of the stream encountered is about equal to that through which the earth passed eight years ago. This may be doubted, however, though there are slight evidences of an eight-year period in the character of the display and observations may prove specially interesting. The Capricornids (July 19–Aug. 6) with radiant at 304° – 11°, and the Aquarids (July 24–31) radiant 338° – 11°, usually form two of the principal displays of the July–August period; but there are some hundreds of others exhibiting various degrees of strength, though the majority are very attenuated and are only to be recognised by long and accurate observation."

**Ancient Greek Astronomy.**—M. E. M. Antoniadi contributes an article to *L'Astronomie* for May in which he points out that several of the philosophers of ancient Greece anticipated the conception of universal gravitation. Anaxagoras, Plato, Aristotle, and others perceived that massive bodies exercised a force directed towards their centres. Aristotle ascribed the tides to the action of the sun. Anaxagoras and Empedocles recognised that the centrifugal tendency of a revolving body, such as the moon, enabled it to circulate round a central orb without falling into it. While these conceptions were quite sound, it does not appear that they were tested numerically with the same rigour as was done by more modern philosophers. Newton deduced from Kepler's laws that the sun exerts an attractive force on the planets varying as the inverse square of the distance. He did not announce his law of universal gravitation, however, until he had demonstrated that the fall of the moon towards the earth in a second was to the fall of a body at the earth's surface in the ratio of inverse squares of the distance from the earth's centre. He also demonstrated that a sphere attracts external bodies as though concentrated at its centre. Hence while we recognise the merits of the ancient philosophers, we cannot put them on the same level as Newton.

**Measures of the Brightness of Earth-shine.**—Prof. H. N. Russell in the *Scientific American* for July gives an account of the measures of the intensity of earth-shine on the moon made by M. Danjon at Strasbourg. He used an ingenious photometer of his own design in which the light of the sunlit lunar crescent was admitted to one section of the objective, weakened by reflection from plane unsilvered glass surfaces, and then compared with the earth-shine admitted into another section of the objective. He found that when the moon is 30° from the sun the earth-shine is $\frac{1}{1000}$ of the intensity of an equal portion of the sunlit crescent; at 90° from the sun the ratio is less than $\frac{1}{10000}$; at 120° from the sun it is $\frac{1}{40000}$. It cannot be followed further than this. The experiments also showed that the earth-shine was bluer than the reflected sunlight; they indicated that the earth is a less rough reflector than the moon, which is reasonable since much of the earth's light would be that reflected from vapours in its atmosphere. The resulting albedo of the earth is about 29, perfect whiteness being represented by 100. The figure is lower than previous estimates, which have been in the neighbourhood of 50. It is concluded that the full earth would give the moon $\frac{1}{10000}$ of the light of the sun, or more than 40 times as much as the full moon gives us. Allowing for the difference of areas, the albedo of the moon is $\frac{1}{3}$ of that of the earth, or about 10.