

News and Views.

A STRONG commission, commencing under the chairmanship of the late Lord Milner, and comprising among others Sir Arthur Shipley, Sir Daniel Hall, Sir John Farmer, Dr. A. W. Hill, and Mr. F. B. Smith, has lately reported ("Agricultural Research and Administration in the Non-self-governing Dependencies." Report of Commission, Cmd. 2825, London, H.M.S.O., 1927. 2s.) on the question of the difficulty experienced in recruiting officers of satisfactory ability for research and administrative work in the non-self-governing colonies of the British Empire. The difficulty is largely put down to lack of general interest in the development of these colonies, though they form a sixth of the area of the Empire, and have 50 million inhabitants. An interim report has already been issued, upon which action has been taken by establishing a number of scholarships, similar to those provided by the Empire Cotton Growing Corporation, whose incumbents, after taking a degree similar to the Cambridge Science Tripos, Part II., shall spend one year in special training in Great Britain and one year in the Imperial College of Tropical Agriculture in Trinidad. In this way it is hoped to form a kind of reservoir from which the colonies may draw trained men, who will have had at any rate one year of tropical experience under proper guidance.

THE second part of the report before us deals with the collection and dissemination of information about the research and other work that is in progress in the different colonies, and it is recommended that a kind of central clearing-house, upon the lines of the Imperial Bureaux of Entomology and Mycology, be established in London for the purpose of collecting, abstracting, and compiling and issuing a periodical summary of information. The third part then goes on to deal with the organisation of research, and it is recommended by a majority of the Commission that a central advisory council be established in England, the chairman of which (a distinguished man of science) and secretariat shall be full-time officers, the former also travelling into the various colonies to see at first hand what is being done and to advise upon the spot. The duty of the council would be to collect information as to the work going on in every dependency, and to advise and criticise. The whole report is worth careful perusal.

DR. R. H. PICKARD has been appointed Director of the British Cotton Industry Research Association in succession to the late Dr. A. W. Crossley, who resigned the post shortly before his death on Mar. 5 last. During the past seven years Dr. Pickard has been Principal of Battersea Polytechnic, and to the responsible duties of this post he has added those of the directorship of the British Leather Manufacturers' Research Association. From 1899 until 1907, Dr. Pickard was head of the Chemistry Department of Blackburn Municipal Technical School, and afterwards principal of the same Institution until his appointment to Battersea. During this period Dr. Pickard,

in collaboration with his staff, published numerous papers in the *Journal of the Chemical Society*; for the most part these deal with the preparation of the isomeric borneols and menthols in a state of optical purity, and also with the synthesis and extended examination of a very large number of optically active organic compounds of simple chemical constitution. Considered as a whole, this work forms one of the most important and systematic attempts which have been made towards the solution of the complicated and difficult problem of the relationship between chemical constitution and optical activity. This record as a scientific investigator, combined with the experience gained during the tenure of administrative posts of considerable responsibility, affords ample assurance that the various activities of the British Cotton Industry Research Association will continue to be maintained at a high level in the hands of the new Director.

DR. E. V. APPLETON'S discourse delivered at the Royal Institution on Friday, April 29, was entitled "Wireless Transmission and the Upper Atmosphere." It is now becoming more and more evident, he said, that the atmosphere has a profound influence on the transmission of radio waves through it and thus on radio telegraphy generally. The earliest indication of atmospheric influence was Marconi's successful transmission across the Atlantic in December 1901. The distances previously accomplished by Marconi were so short as to be explicable on the simple hypothesis that the radio waves travelled in straight lines. But communication to America, as the late Lord Rayleigh was the first to realise, raised a new question. Could the waves bend round the protuberance of the earth, as sound waves bend round a corner? Lord Rayleigh and others investigated the problem mathematically, and their results showed that some influence other than ordinary diffractive bending was at work. We now know that this other influence is the so-called Heaviside layer of electricity in the upper atmosphere, which guides long radio waves round the earth's curvature. All recent work has tended to prove the Heaviside layer theory, and within the last two years it has been shown that the signal fading, with which many broadcast listeners are familiar, is also due to the action of this layer. This signal fading is most marked at a distance of 100 to 150 miles from the transmitting station and is due to the interfering action of the waves sent back to the ground by the Heaviside layer.

EXPERIMENTS made in conjunction with the B.B.C. engineers and the National Physical Laboratory show that the height of the Heaviside layer is about 70 km., rising to 120 km. during the night and falling to its lower value with the advent of sunrise. The layer is only found to reflect broadcast waves copiously at night, there being practically no reflection during the day-time, when the ground waves only are received. Experiments on the very short wave-lengths have shown that the ground waves die out very rapidly with increasing distance, so that reception at great

distance is accomplished only by means of waves deflected by the upper atmosphere. But with decreasing wave-length the amount of bending the atmosphere can accomplish becomes less and less, so that with very short waves a penetration of the Heaviside layer becomes feasible, especially at night when the amount of electricity in the upper atmosphere is least. Waves of the order of one metre in wave-length would penetrate it and thus be of no use for long-distance communication on the earth. A surprising result has recently been found in the effects of magnetic storms on radio transmission. Such storms interfere very seriously with long-distance short wave transmission, and yet with very long waves the signals are stronger than usual. It is possible to explain these results in terms of the Heaviside theory if we assume that a magnetic storm increases the electricity in the layer. In such a case the short waves which have to penetrate the layer to be bent gradually back to the ground are more strongly absorbed, because they are returned at lower levels where the friction experienced by the electricity is larger. On the other hand, the long waves are truly reflected by the layer at its surface, and an increase in the amount of electricity in the layer increases the amount of this reflection.

AN exhibition of modern British architecture was opened by Viscount Peel at the Royal Institute of British Architects' galleries on April 26. Organised by the Institute, this constitutes a new event to be repeated annually. It may be asked why, with the architectural room just opened at the Royal Academy, such a new departure is necessary. The explanation is twofold—the limited space at the Academy and the decision of the promoters of this new exhibition to admit photographs. Lord Peel in his speech referred to the Swedish and American exhibition of architecture previously held by the Royal Institute, and to the value of arousing the dormant artistic tastes possessed by a large section of the public by the display of good examples of current work; he also referred to the danger of producing rural slums by the indiscriminate erection of small houses without adequate artistic advice. The exhibits consist mainly of photographs, though there are a number of important buildings represented as perspectives in colour. Most of the works present domestic architecture, and it is noticeable that the grandiose buildings of the past have given way to smaller and simpler types of houses. Public buildings are also well represented, and there are examples of schools and other institutions; but visitors expecting to see interiors showing the application of the architect's work to the technical problems required to meet the needs of the man of science will be disappointed. Such a display is, however, apparently outside the scope of the exhibition. The galleries will remain open until June 3.

IN a lecture given under the auspices of the British West India Committee on April 28, Mr. Ormsby-Gore, Under-Secretary of State for the Colonies, described the work of the Empire Marketing Board.

Its tasks, he said, are to bring home to every section of the community the idea and the significance of the British Empire and its resources, and to mobilise the forces of research, both economic and scientific, to assist in the better production, distribution, storage, and marketing of Empire products. To ensure the greatest possible co-ordination of research work and to guard against unnecessary overlapping, a small Research Committee has been formed. Applications for grants for scientific research are either received through the appropriate Government department or referred by the Committee to the appropriate department for consideration and advice. Grants are in general limited to researches which are likely to be of importance to the Empire as a whole and not merely of local importance; for example, research in animal nutrition and in entomology. The latter field of research is of the utmost importance, as it is estimated that one-tenth of the world's crops are destroyed by insect pests yearly. The Board is sufficiently impressed with the results already achieved in connexion with the biological control of insect pests to make a grant of £15,000 a year for five years for the establishment and maintenance in England of a sort of 'parasite zoo,' where parasites destructive of insect pests can be bred and distributed wherever needed throughout the Empire. By such work as this it is hoped that the Board will earn the support of all political parties in Great Britain and also that of the various Governments of the Empire.

THE spring floods of the Mississippi have attained unusual proportion this year. They are due to the melting of snow in the northern part of the vast drainage area of the river in March, combined with the spring rains of April. A recent article in the *Times* points out how these floods periodically attain dangerous proportions, threatening all the lower flood plains and delta of the river, which are protected from normal inundation by levees or embankments, partly of natural growth and partly of artificial construction. The last severe floods on a large scale were in 1912, and some twenty-two years earlier the floods were so heavy that the levees protecting New Orleans were breached and parts of the city inundated. This year the floods of the two rivers Arkansas and Yazoo, dammed back by the main torrent of the Mississippi, have already flooded great areas. But the most serious danger lies in the rise of water in the delta where New Orleans lies, protected by levees, ten to fifteen feet below the normal river level. In order to drain away the waters before they inundate the city, a breach has been made in the levee at Poydras, fifteen miles below New Orleans. Many miles of swamp and copse, chiefly the resort of trappers, have thus been flooded, but this measure may save New Orleans.

SIR ROBERT HADFIELD has generously provided a sum of about £200 towards the expenses of a member of the Institution of Mining and Metallurgy who would be of special service at the forthcoming Empire Mining and Metallurgical Congress in Canada, but

would not be able to attend without financial assistance. A committee was appointed by the Council of the Institution to allocate the grant, and has recommended that it be offered to Assist.-Prof. Bernard W. Holman of the Mining Department of the Imperial College of Science and Technology, South Kensington. Prof. Holman had a distinguished career as a student at the Royal School of Mines, he has made noteworthy contributions to the publications of the Institution of Mining and Metallurgy, and he is a good speaker in discussions. He spent 1925-26 in South Africa, where he made a good impression in the mining fields, and it is thought that his presence at the Canadian meeting will be useful in discussing the proposed programme for the third congress, to be held in South Africa, apart altogether from his value in discussing the purely technical papers which will be read.

THE Easter Conference of the Society for Experimental Biology was held in Cambridge on April 19 and 20 in the Physiological and Zoological Laboratories, by kind invitation of Profs. J. Barcroft and J. Stanley Gardiner. A number of very interesting papers were read during the three sessions of the Society. Dr. E. Delf gave an account of her recent work, showing the beneficial effect of small doses of ultra-violet light on plants. Dr. A. S. Parkes discussed the relation of oestrin to corpus luteum. Dr. G. V. Anrep explained the present position of our knowledge of cortical activities as elucidated by the study of conditioned reflexes. Mr. J. T. Saunders showed a beautiful series of experiments illustrating chemotaxis in ciliata to *pH*. Dr. E. D. Adrian gave an account of his recent work on the nature of the nervous impulse in sensory nerves. Mr. J. Gray gave a critical account of the rôle of gravity in cell-division. Prof. J. S. Huxley described the induction of pre-metamorphosis in *Echinus* larvæ following chemical inhibition of the larval tissues. An important feature of the conference was a symposium on the relation of evolution to heredity and environment, conducted by Mr. G. C. Robson, Mr. J. B. S. Haldane, Mr. C. E. Diver, and Dr. F. A. E. Crew. The complete adequacy of natural selection acting on Mendelian variation was pointed out, particularly in the case of small variations, and the importance of the environment both in originating mutation and in selecting the variants was demonstrated.

A JOINT meeting of the vice-presidents and members of the Councils of the Institution of Fuel Technology and the Institution of Fuel Economy Engineers was held under the chairmanship of Sir Alfred Mond on Friday, April 29. As president of both Institutions, in November last, Sir Alfred Mond, having found a general desire amongst those interested in problems of fuel economy that the two existing Institutions should be merged into one, suggested terms of fusion. Under the terms of fusion finally accepted, the name of the merged Institutions will be "The Institute of Fuel"; and the present honorary secretaries of the parent Institutions will be joint honorary secretaries of the new Institute. At the meeting the final steps

for the fusion of the existing Institutions and the inauguration of the Institute of Fuel were taken. Sir Alfred Mond expressed his great gratification that the fusion had been successfully accomplished. He said that the essential importance of the problems connected with fuel economy and fuel technology to the future of British industry is becoming increasingly recognised. The Government is vitally interested in the subject, and has appointed a National Fuel and Power Committee to investigate and consult upon the various problems in their many aspects. That Committee is progressing satisfactorily with its work, and it is of the utmost importance that there should be a unified Institution, important in numbers and personnel, to investigate, advise, and instruct the committee and the community on these highly technical matters. Mr. H. L. Pirie and Mr. Edgar C. Evans were afterwards appointed joint honorary secretaries of the Institute of Fuel.

THE first conversazione this year of the Royal Society will be held on Wednesday, May 11, at 8.30 P.M.

THE King has been pleased to nominate Dr. H. H. Dale, head of the Department of Biochemistry and Pharmacology, Medical Research Council, to be, for five years, a member of the General Council of Medical Education and Registration in the United Kingdom, in succession to Sir Nestor Tirard.

PROF. RICHARD WILLSTÄTTER will deliver the Faraday lecture of the Chemical Society on May 18, at 5.30 P.M., taking as his subject "Problems and Methods of Enzyme Research." The lecture will be delivered in the theatre of the Royal Institution, 21 Albemarle Street, London, W.1.

DR. R. J. TILLYARD, Chief of the Biological Department, Cawthron Institute, Nelson, New Zealand, has been elected an honorary member of the Entomological Society of Belgium. There are only six of these honorary members, and Prof. E. B. Poulton, Hope professor of zoology in the University of Oxford, is the only other British scientific worker among them.

AT the annual meeting of the Members of the Royal Institution, held on May 2, the following officers for the ensuing year were elected: *President*: The Duke of Northumberland; *Treasurer*: Sir Arthur Keith; *Secretary*: Sir Robert Robertson.

A PUBLICATION grant of £2500 is receivable by the Royal Society from H.M. Government during the current year. The grant is available for assisting the publications of other scientific societies, as well as for assisting the separate publication of books, memoirs, etc., of a scientific nature. Applications for grants will be adjudged by the Council of the Royal Society at its meeting early in July, but should be received before the council meeting of June 10. Applications from societies will be received by the secretaries of the Royal Society; those from individuals must be brought forward by members of Council.

THE Rockefeller Medical Fellowships for the academic year 1927-1928 will shortly be awarded

by the Medical Research Council, and applications should be lodged with the Council not later than June 1. These Fellowships are provided from a fund with which the Medical Research Council has been entrusted by the Rockefeller Foundation. Fellowships are awarded by the Council, in accordance with the desire of the Foundation, to graduates who have had some training in research work in the primary sciences of medicine or in clinical medicine or surgery and are likely to profit by a period of work at a university or other chosen centre in the United States before taking up positions for higher teaching or research in Great Britain. A Fellowship will have the value of not less than £350 a year for a single Fellow, and travelling expenses and some other allowances will be made in addition. Full particulars can be obtained from the Secretary, Medical Research Council, 15 York Buildings, Adelphi, London, W.C.2.

THE Physiological Society was founded in 1876, and its fiftieth Anniversary was in 1926. Owing to certain difficulties the celebration of the jubilee was deferred until this year. On Friday, May 13, the Society is holding its jubilee dinner. This will be followed by an ordinary meeting at Cambridge on Saturday afternoon, and on Sunday, May 15, Prof. and Mrs. Barcroft are giving a garden party in the Fellows' Garden of King's College.

PHYSICS generally will benefit considerably under the will of the late Prof. A. W. Scott, Phillips professor of science at St. David's College, Lampeter, who died on Mar. 7 at the age of eighty-one years. The University of Cambridge is to receive £7000 and the Royal Society £1000, the income from which is to be applied for the promotion of the physical sciences, and the British Association, the Physical Society, and the Institute of Physics are to receive £250 each. The residue of the estate, after sundry bequests, is to be divided into three equal portions, two of which are to go to the Universities of Oxford

and Cambridge respectively, in each case "for the furtherance of physical science."

APPLICATIONS are invited for the following appointments, on or before the dates mentioned:—An assistant lecturer in chemistry at the Cardiff Technical College—The Principal, Technical College, Cardiff (May 14). A resident director of the National Gallery of Ireland—The Registrar, National Gallery, Dublin (May 19). A senior lecturer in education in the University of Manchester—The Registrar, The University, Manchester (May 19). A lecturer on pharmacology and therapeutics at St. Bartholomew's Hospital Medical College—The Dean, St. Bartholomew's Medical College, St. Bartholomew's Hospital, E.C.1 (May 20). Two research workers at the Low Temperature Research Station, Cambridge, for researches into the principles of canning foods of animal and vegetable origin—The Secretary, Department of Scientific and Industrial Research, 16 Old Queen Street, S.W.1 (May 21). A veterinary inspector under the Hertfordshire County Council and the Hereford City Council—The Clerk of the County Council, Shirehall, Hereford (May 21). A lecturer in chemistry in the University of the Witwatersrand, Johannesburg—The Secretary, Office of the High Commissioner for the Union of South Africa, Trafalgar Square, W.C.2 (June 1). A lecturer in biology and botany at the Birmingham Central Technical College—The Principal, Central Technical College, Suffolk Street, Birmingham. An assistant bacteriologist at the Wellcome Tropical Research Laboratories, Khartoum, and a laboratory assistant under the Sudan Government—The Controller, Sudan Government London Office, Wellington House, Buckingham Gate, S.W.1. A laboratory mechanic in the engineering laboratories of the Northampton Polytechnic Institute—The Principal, Northampton Polytechnic Institute, St. John Street, E.C.1. An analytical chemist—Crosse and Blackwell, Ltd., Soho Square, W.1.

Our Astronomical Column.

THE COMING SOLAR ECLIPSE.—It is evident that a keen and widespread interest prevails concerning this phenomenon, so rare in England. Many pamphlets on the subject are appearing. We have received one that is published by the Burnley Grammar School. Burnley lies within the totality zone but near its southern edge. The pamphlet was largely drawn up by members of the sixth form and gives in simple terms the conditions for eclipses in general and this one in particular. There is a warning that observers in Yorkshire should not select stations with high ground to the east of them, as morning mist is prevalent in such places. A large-scale map of the district (3 miles to 1 inch) includes Caton, Giggleswick, Settle, Stonyhurst, Colne, and shows the loci of different durations of totality, and of mid-eclipse at times 5 seconds apart.

Among the hints to photographers is the suggestion that attempts should be made to obtain colour photographs of the corona and prominences; this suggestion is also made by Mr. F. J. Hargreaves (*B.A.A. Journal* for March), who gives useful notes on the different screen plates and their ratios of exposure. Two small errata in the Burnley pamphlet may be noted: p. 13, for Sivar read Sivan; p. 15, the Norway eclipse was in 1851, not 1857.

Dr. Comrie has revised the eclipse calculations, using the latest available positions of the sun and moon. He finds that the track is likely to be 1 mile north of the Almanac position and the time 5 seconds later: the alteration is chiefly due to the deviation of the sun from Newcomb's Tables. With regard to some alarmist paragraphs on the subject in the daily press, it should be noted that uncertainties of similar amount are inseparable from all eclipse predictions, and that the only people appreciably affected are those very near the southern limit of totality, who should if possible move a little farther north.

The Astronomer Royal has announced that radio time signals will be sent out at 6^h, 6^h 15^m, and 6^h 30^m (summer time) on the eclipse morning. These will be the usual 6 dots, the last of which is the exact minute.

All observers can do useful work by noting the exact time of the beginning and end of totality, correcting their watches by the radio signals, and indicating their exact locality, which may be done on a tracing from the 1-inch Ordnance map (or a larger scale). Merely saying "in Settle" or "in Burnley" is not near enough for this purpose.