

## News and Views.

THE Pedler Lecture of the British Science Guild was delivered to the University of Durham Philosophical Society at Armstrong College on Oct. 21 by Prof. J. Irvine Masson, who took as his subject "Problems in the National Teaching of Science". Reviewing, on a national scale, education in pure science, as it is carried on at our universities and in schools, Dr. Masson asked if the pendulum has overswung. Are we teaching too much science or teaching science too much? To those who are going to be lifelong scientific workers we have to, and do, give an intensive training; but every science is now swelling so quickly that it can no longer be confined within the three-year limit of the undergraduate course. Two more years are needed and are actually expected of a young man before he is eligible for a first post as a practising scientific worker. This needs universal recognition. Prof. Masson is of opinion that we are trying to teach too much and too specially to those who are not going to be professional scientific workers. The figures for the whole country show a great preponderance of 'honours' over 'pass' students, and a great many of these honours specialists do not go on with further training in their science, but turn to school-teaching, besides other occupations.

TEACHERS carry into schools the same exclusive specialisation, and a vicious circle is created, which is helped by the higher salaries paid to school-teachers who are honours graduates. Prof. Masson thinks that if this were altered, and the universities reformed their pass-degree courses, we should get much better balanced teaching in schools; and the whole series of educational sieves through which our young people pass (or are forced) would work naturally. In the schools, especially the secondary schools, exaggerated science teaching is given on a very large scale from absurdly youthful ages, while other subjects (for example, German) are neglected. These things are as bad for the future scientific worker as they are for all other students. They can be cured by the reforms already mentioned, coupled with a change in the functions of the school certificate. In an appendix to the printed lecture, these arguments are supported by a statistical survey, which shows the trend during recent years in the choice of pursuits at the universities and schools of the realm.

DR. F. C. BENHAM, in a report on "Fluctuations in Employment in Great Britain", prepared for the recent meeting of the World Economic Congress in Amsterdam, stated that the general standard of living in Great Britain is now probably higher than before the War. A recent inquiry by the Ministry of Labour showed that weekly full-time rates of wages, for those classes of adult workpeople for which information is available, averaged between 70 and 74 per cent in December 1930 above the level of August 1914. Weekly earnings of which the wage index takes no

account have increased still more, while there have been also considerable reductions in normal weekly working hours, which in effect mean that hourly rates of wages are between 90 and 100 per cent higher. The cost of living, however, is less than 60 per cent higher. Thus 'real' weekly wages are appreciably greater and hours of work are less. At the same time, the transference of income, through the machinery of public finance, from the relatively rich to the relatively poor is much greater. Yet against all this must be set the large numbers of unemployed, which tend to bring down average 'real' yearly earnings. During the past twenty years, methods of production have improved, technical efficiency has increased, and the productive capacity of the world appears greater than ever before. Undoubtedly a marked increase of economic welfare would take place if only the vast number of unemployed could be absorbed into industry. The problem, however, is a world problem, and will only be solved by intelligent co-operation between the various nations.

THE Annual Report of the Director of the Meteorological Office for the year ending March 31, 1931, which has just been published by H.M. Stationery Office, describes the principal activities of our national meteorological institution's seventy-sixth year. It records a steady all-round increase in the application of theoretical meteorology to the practical affairs of everyday life, shown by an always growing number of applications for expert advice in matters connected with climate and weather, in each of the various sections into which the Office is divided. We learn that in addition to activities of this kind, much of the time of the staff was devoted to carrying out decisions made at three important conferences held in 1929, namely, the International Conference on Safety of Life at Sea, the Conference of Empire Meteorologists, and the International Conference of Directors of Meteorological Services. Among the changes involved are those relating to the interchange of weather reports by wireless on land and at sea. Owing to the increasing amount of interference between the wireless issues on land of different countries consequent on expansion of programmes arising from the needs of growing aviation services, it was found necessary to arrange for fewer, but more comprehensive, wireless messages. These are issued by powerful stations in the United States, Great Britain, France, Germany, and Russia. The exchange of wireless weather reports at sea has been comparatively little affected. The increasing responsibilities of official meteorology have been met to a large extent by frequent revision of methods of work with the object of making the most efficient use possible of the available establishment, but the creation of a few new posts was found to be unavoidable, and among these may be mentioned the appointment of an officer to take charge of special investigations into problems of atmospheric visibility connected with aviation, naval operations, and light-houses.

At a recent meeting held at Locarno, the International Meteorological Committee agreed upon the programme of meteorological, magnetic, and electrical research to be undertaken in the Arctic regions during the winter 1932-33, in accordance with the decision to organise a second 'International Polar Year' on the fiftieth anniversary of the first undertaking of this character. The scheme involves the setting up of a circumpolar chain of temporary observatories, equipped with special apparatus for the work to be done. In view of the long Arctic coast-line in Russia and Siberia, it is obvious that the co-operation of the Russian Government is particularly desirable; it is satisfactory to learn, therefore, not only that such co-operation will be forthcoming, but also that the Russian contribution is likely to be the largest made by any one country. It is unfortunate that the organisation of an enterprise such as this, which involves financial expenditure without immediate economic return, should coincide with the 'economic blizzard'; but although this has prevented some governments from assisting financially, private help has generally resulted in the necessary funds being available, and on the whole the scheme promises well. Of the many great improvements in equipment that the past fifty years have made possible, those due to the development of wireless telegraphy may be noted especially. There is a possibility that the problem of obtaining observations of pressure, temperature, and humidity at high levels in the atmosphere, in regions where the ordinary instruments sent up in registering balloons are not likely to be recovered, may be solved by an apparatus which automatically emits wireless signals when the quantities to be measured reach certain predetermined values.

The wet nature of the recent summer in England considerably increases interest in the results of the combined harvester-thresher machine trials. Demonstrations have been given in different parts of the country, and information from the Institute of Agricultural Engineering at Oxford regarding the performances of the machines is given in a recent statement issued by the Ministry of Agriculture. Eleven machines in all were used, one of which for the first time is owned by a contractor, while nine belong to private farmers. About 1500 acres of cereals was cut, most of which was barley, the superiority of the combine over ordinary methods of harvesting being particularly marked with this crop. Good malting samples, fetching prices of 45s.-50s. per quarter, have been obtained where, owing to the wet season, the crop would have been seriously damaged if exposed in stooks in the normal way. The additional use of a drying machine is not essential, but as it allows of starting harvesting operations much sooner after rain, the advantages may be considerable. The best day's work was done by a caterpillar combine used by Mr. G. H. Neville of Wellingore, Lincs, and consisted of cutting 14 acres of oats, yielding altogether 144 sacks. The question of straw remains a problem, as the present type of combine, designed to suit American conditions, is unable to deal with a crop more than

3 ft. in length. Messrs. Clayton and Shuttleworth have, however, now produced a British machine which seems able to overcome this difficulty. As an alternative, in districts where the straw is very long and of sufficient value, a binder may be used in conjunction with the harvester-thresher, or shorter straw can be gathered with a hay-loader and put in a rick or baled in the field. Apart from these minor difficulties, it is evident from this year's experience that combine machines are a thoroughly practical proposition for use in England, and that they are of particular benefit to the barley grower in wet seasons.

A MEETING of the administrative council of the Empire Cotton Growing Corporation was held in Manchester on Oct. 21, and the Right Hon. the Earl of Derby, president, presented the quarterly Report of the Executive Committee. One important point in the Report is that the Committee has decided to recommend that each experimental station should only be required to produce a full report every third year. Thus each annual volume would contain four full reports, while the remaining eight stations would produce summaries only of the work of the last season. The stations would thus produce their full reports in rotation. The Committee recommends that stations from which summaries only are required should, nevertheless, take care to include in those summaries, or in a separate note if desired, any observations or results that may be of immediate use to co-workers. Lord Derby remarked that the finances of the Imperial College of Tropical Agriculture are a source of anxiety to the governing body of the Empire Cotton Growing Corporation, owing to a reduction made by the Empire Marketing Board in the grant and the possibility of a diminution in the amount of the sums receivable from overseas contributors. The Corporation takes the greatest interest in the work of the College, which has led to great improvement in the standard of the agricultural officers in the Colonial service. Any curtailment of the activities of the College or impairment of its efficiency would be a real calamity.

In the Report are references to administrative changes and work at the various experimental stations. Before the Research Committee, Dr. Harland reported on the work of the Genetics Department, and gave a résumé of what had been accomplished during the first five years since the Research Station at Trinidad was established. The climate has provided no obstacle to progress which it was not possible to overcome, but it has been found necessary to adapt the technique of the work to meet difficulties that have arisen. Various insect pests have, however, proved rather a limiting factor, and for this reason Dr. Harland is extremely glad that the Corporation has reopened the Experiment Station in St. Vincent, where the obstacles to cotton growing are less formidable. At the same meeting, Sir James Currie, Director of the Corporation, reported certain matters which had arisen since the Report was drafted. In the Sudan this season, the crop has so far suffered much less from disease than last year, and it is hoped

that satisfactory yields will be obtained. In the rainfall districts, it is interesting to note that the variety tests with American cotton have indicated that the Corporation's U.4 strain from Barberton has yielded better than all other varieties, both in Mongalla and in the Nuba Mountains. Its quality, moreover, appears to be satisfactory.

CAPT. J. M. DONALDSON in his presidential address to the Institution of Electrical Engineers on Oct. 22 dealt mainly with the work being done by the large electric power companies, which are out of touch with the national network of power lines now being rapidly erected round Great Britain. In London, the London Power Company has been carrying out in a quiet and unostentatious manner a remarkable work of unification and consolidation. The company controls and has linked up the power stations at Deptford, Bow, Grove Road, and Willesden, and the large Battersea station now being erected will form part of the group. Last year its output was 819 millions of units, and the maximum demand at any one time was 283,400 kilowatts. Another group consists of the County of London and City of London companies. The main power station of this group is at Barking, where plant producing 240,000 kilowatts is installed. At the present time this is the largest power station in Great Britain. A further extension of 150,000 kilowatts has been authorised. A large fraction of the output is sold outside London. The possibility of linking up the large private companies was considered, but it is very doubtful if the companies would have been willing to agree to this some years ago when the national scheme was first introduced. The dwellers in the country are well aware of the low prices of electricity which are charged in many towns. They naturally think, therefore, that the much higher price they have to pay is inequitable. This is not the case, for the cost of supplying electricity in the rural areas depends more on the density of the population than on other considerations. In technical language, it depends on the revenue per mile of the supply main.

IN a paper on radio research in the British Empire read by R. A. Watson Watt and O. F. Brown to the British Association on Sept. 28, an account was given of the collaboration between the home and dominion boards of radio research. The study of atmospheric has proved that in order to make real advances in our knowledge, the observing network must be spread over the whole surface of the globe. This problem is of vital importance to the radio engineer. Attenuation and fading may reduce the received intensities, but it is easy to compensate for them by gain control at the receiver. With atmospheric, however, the compensation can only be usefully carried to the point at which the noise level due to atmospheric, to artificially generated disturbance, or to internal set noise becomes comparable with the signal. Set noise can be mitigated, artificial disturbance avoided, but an irreducible minimum of atmospheric disturbance must be accepted along with the desired signal. The Radio Research Board, therefore, does not deal with the elimination of atmospheric but with their

nature and origin. On the radio communications side the Board has made its contribution to the demonstration of the limits of atmospheric mitigation. On the geophysical side it is still exploring the possibilities of utilising atmospheric observations in practical meteorology. It is now proved that the interesting phenomena of reflection from the Kennelly-Heaviside layer are related to the terrestrial magnetic field. It will therefore be of great interest to compare the data obtained from observations made in the northern and southern hemispheres.

HIS MAJESTY THE KING has graciously placed on loan in the Department of Botany of the British Museum (Natural History) a collection of plants presented to him by the University of Buenos Aires. The collection contains 302 named plants, which are of great scientific and historical interest, as they were gathered during the Delimitation Expedition (1902-3) under Sir Thomas H. Holdich, the Royal delegate appointed by Edward VII. on the request of the presidents of Argentina and Chile to determine the Patagonian Argentine-Chile frontier. The University of Buenos Aires charged certain members attached to the Arbitration Commission with the making of a systematic botanical survey of the difficult areas. The dried specimens were divided into three lots—one was retained at Buenos Aires, another was presented to the Valparaiso Museum, and the third was preserved until an opportunity arose of delivering "with the homage of Argentina to His Britannic Majesty this historical material collected in the fulfilment of the judgment which re-established peace and harmony between the sister nations." The collection was entrusted to Lord Moynihan on his recent visit to Buenos Aires. It is accompanied by two volumes of collotype reproductions, one containing unpublished letters of A. von Humboldt, the other the botanical journal of his pupil, A. J. A. Bonpland. The Department of Botany has also been presented with a collection of 446 Angolan plants by Mr. J. Gossweiler, well known for his botanical exploration in Angola. Mr. J. J. Joicey has added to his previous benefactions to the Department of Entomology of the Museum by presenting the whole of his Indo-Australian Noctuidæ, the Geometridæ other than the African species, the Ægeriidæ (Clearwings), and the types of many species belonging to several other families. Recent acquisitions by the Department of Mineralogy include one of the many masses of meteoric iron found in June 1931 around the large meteorite craters near the Henbury cattle station, Finke River Central Australia, presented by Prof. Kerr Grant.

IN *Engineering* of Oct. 16 is an illustrated account, by Mr. A. E. Williams, of the coco-nut oil industry, with descriptions of the machinery in use. There are approximately 7,000,000 acres of coco-nut palms under cultivation, of which area more than one-half is in the British Empire. The chief botanical specimen cultivated is *Cocos nucifera*. Some seven or eight years elapse between the planting of the palms and the time they bear fruit, while the fruiting period is from sixty to seventy years. Each tree yields annually from

eighty to ninety nuts. Of the nuts, the dried kernel, called copra, is used for its oil, the husk can be spun into coarse yarn, while the shell is used for fuel or for the manufacture of charcoal. The essential parts of a modern plant for obtaining coco-nut oil include drying furnaces for the copra, grinding mills for reducing the copra to meal, and hydraulic presses for expelling the oil from the meal. Before being pressed, the copra meal is heated in steam-heated kettles, and by this means it is possible to reduce the oil content from 70 to 6 per cent. The residual meal is valued as a cattle foodstuff. Coco-nut oil represents about twelve per cent of the total oils and fats used in soap manufacture in Great Britain and about twenty per cent in America, while it represents about fifty per cent of the total margarine made in America and about thirty-five per cent made in Great Britain. It is also used in chocolate and toffee manufacture.

THE Government of India has authorised the issue by the Zoological Survey of India of a third serial, additional to the *Records of the Indian Museum* and the *Memoirs of the Indian Museum*. Since the appointment of Dr. B. S. Guha as anthropologist to the Zoological Survey, provisionally for a period of two years in 1927 and permanently as from 1929, a considerable amount of research work in anthropology has been and is being carried out; while it is hoped that from time to time reports will be available for publication dealing with research on the population, both past and present, of India. Up to the present the *Memoirs* and *Records* have dealt solely with zoological subjects, with one exception, a paper by the late Dr. Nelson Annandale. In order to avoid a change in the character of these publications, it has been decided to inaugurate a new series of *Anthropological Bulletins*, with the first of which, a report on the human relics recovered by the Naga Hills (Burma) Expedition, we deal elsewhere (p. 762).

THE Report of the Irish Radium Committee for 1930 in *Sci. Proc. Roy. Dublin Soc.*, vol. 20 (N.S.), No. 10, p. 99 (also separate issue), states that the generosity of members of the Royal Dublin Society and of the general public enabled an additional amount of 496 mgm. of radium to be purchased, bringing the total quantity available up to 907 mgm. From the several medical reports included, it is evident that rodent ulcers and skin cancers react most favourably to radium treatment, with a cure in some 80-90 per cent of the cases. Cancer of the tongue, when not too extensive, and of the uterine cervix, yield 40-60 per cent of cures. Cancers of the breast, rectum, and other regions are seldom cured, though now and then a striking result is obtained. It has to be remembered, however, that most of these cases are too advanced for successful operation. Certain non-malignant conditions, such as uterine hæmorrhage, also react favourably to radium treatment.

IN NATURE for Sept. 12, p. 440, reference was made to the obscurity that prevails as regards the function of the forceps of the common earwig. We have since received letters from Mr. M. H. Lapidge, of Hampton Wick, and Dr. van der Sleen, of Haarlem, concerning

this subject. Both correspondents mention having personally observed these insects to use their forceps in manipulating their wings. Mr. Lapidge states that he has several times seen earwigs use their forceps to fold up their wings beneath the tegmina. Dr. van der Sleen, on the other hand, remarks that he has observed these insects using their forceps for opening their wings. While it seems certain that one of the functions of the forceps is in connexion with the manipulation of delicate and complexly folded wings, their main use can scarcely be regarded as having been definitely settled.

THE monthly journal *Mikrokosmos* with the October issue commences its twenty-fifth annual volume. *Mikrokosmos* aims at extending knowledge of microscopy, and publishes papers on current topics and progress in all branches of microscopy. In the present number, Prof. W. J. Schmidt reviews the progress of histology during the last twenty-five years, Dr. H. Dohrer describes the infection of flies with the fungus *Empusa muscæ*, Dr. Karl Berger writes on the early 'flea' magnifiers, and Dr. G. Venzmer describes what tropical medicine owes to microscopy. Other articles deal with microscopy in schools and with laboratory technique. The journal is well produced on good paper, so that photomicrographs, of which there are several, are adequately reproduced. *Mikrokosmos* is edited by Dr. G. Stehli and published by Franckh'sche Verlagshandlung, Stuttgart, at 2.40 gold marks a quarter.

THE Council of the Institution of Chemical Engineers has appointed Mr. H. W. Cremer to be honorary secretary of the Institution in succession to the late Prof. J. W. Hinchley.

ON the occasion of the opening of the new laboratory of physical chemistry at the University of Freiburg im Breisgau on Oct. 30, honorary degrees were conferred on Lord Rutherford, Prof. Manne Siegbahn, professor of general physics in the University of Uppsala, and Prof. V. M. Goldschmidt, of Göttingen.

THE Ministry of Agriculture and Fisheries has appointed Mr. J. S. L. Gilmour, Curator of the University Herbarium and Museum, Botany School, Cambridge, to be Assistant Director of the Royal Botanic Gardens, Kew. Mr. Gilmour was educated at Uppingham School and Clare College, Cambridge, where he took the Natural Sciences Tripos, Part I. and Part II., Botany.

IT is announced in *Science* for Oct. 9 that Prof. Stephen H. Langdon, professor of Assyriology at the University of Oxford, and Dr. Ludwig Diels, Director of the Botanical Garden and Museum of Berlin-Dahlem, have been elected corresponding members of the Field Museum of Natural History, Chicago, by the board of trustees, in recognition of their eminent services to the museum.

A COURSE of twelve public lectures by Prof. Lancelot Hogben, research professor of social biology in the University of London, on "Genetic Principles in Medicine and Social Science", has been arranged by

the London School of Economics and Political Science, Houghton Street, Aldwych, London, W.C.2. The first lecture will be given on Nov. 27, and the following eleven lectures on Fridays, at 5 P.M. Admission to the whole course is free and without ticket.

At the conversazione of the Belfast Naturalists' Field Club, which was held on Oct. 20 to mark the opening of the winter session, the Club medal was awarded to Mr. S. A. Bennett, formerly science master at Campbell College, for his scientific attainments and his work with the Club from 1908 until 1926. Mr. Bennett was on the Committee of the Club from 1913 until 1926, for three periods was secretary of the botanical section, and from 1919 until 1923 was joint editor of the *Proceedings*. In 1920 he was elected president of the Club, and held that office for two years. Mr. Bennett has contributed much to the knowledge of plant distribution in Northern Ireland, and has done valuable work in local geological and anthropological problems, especially on the recently discovered prehistoric site in County Antrim.

PROF. R. H. DASTUR, of the Royal Institute of Science, Bombay, and his students arranged an interesting and instructive series of experiments illustrating the life processes and the life history of plants, on Sept. 30, at the C.J. Hall, Bombay. This date was arranged so that the exhibition should fall within the week of the centenary meeting of the British Association. Amongst the numerous exhibits were an apparatus for measuring the temperature of a leaf and an apparatus showing automatic records of the air diffusing into leaves through minute pores on their surface. The research work carried on in the Botany Department of the Royal Institute on the physiology of the rice plants has yielded results of practical value, and there were exhibits of living rice plants showing those results. The exhibition was followed by a lecture, illustrated with lantern slides, on "Plant Life on the Earth", by Prof. R. H. Dastur, when the vegetations of the different parts of the globe were illustrated on the screen, mostly in their natural colours.

THE Worshipful Company of Woolmen gives a silver medal each session for theses relating to wool and the processing of wool. The nomination Committee this year has recommended that two medals be granted, namely, to Miss Emma Stott, of the University of Leeds, for a thesis entitled "A Contribution to the Theory of Milling", and to Mr. Kenneth Nicholls, of the Bradford Technical College, for a thesis entitled "Sulphur Content of Wools in Relation to Processing". The Committee has also recommended that certificates of merit be awarded for the following theses: Miss Evlyn Boyd (University of Edinburgh), on "Pigmentation of the Fleece of the Sheep"; Dr. R. O. Hall (University of Leeds), on "The Ventilating Properties of Textile Materials and Fabrics"; Mr. Arthur Johnson (University of Leeds), on "The Influence of Cloth Structure on the Rate of the Milling of Fabrics"; Mr. M. Tempelhof (University of Leeds), on "Studies in the Regularity of Yarns and Slivers by a New Mechanical Tester"; Dr. A. E.

Wilson (University of Leeds), on "Physico-chemical Properties of Wool"; and Mr. George Bancroft (Bradford Technical College), on "The Influence of Environment on Wool". These recommendations have now been approved by the Court of the Worshipful Company of Woolmen.

WE have received from Messrs. Gallenkamp the new issue of their "Catalogue of Chemical and Industrial Laboratory Apparatus". This is a handsome volume of 1471 pages, fully illustrated, and covers the scientific equipment applicable to practically every branch of industry. In a large number of cases brief but adequate descriptions of the use of the apparatus are included, so that the catalogue is much more than a mere list of prices. It should, in fact, be most useful in the school, university, or technical laboratory. The apparatus includes physical, botanical, and general biological equipment, and there is a detailed list of chemicals. At the end of the catalogue there is a useful list of books on various branches of chemistry, biology, medicine, and industry. Messrs. Gallenkamp are to be congratulated on the completeness of their catalogue and on the production of a useful and instructive volume.

APPLICATIONS are invited for the following appointments, on or before the dates mentioned:—A senior assistant in the Bacteriological Laboratory of the Public Health Department, Glasgow—The City Bacteriologist, 20 Cochrane Street, Glasgow, C.1 (Nov. 7). An assistant in electrical engineering at the Wolverhampton and Staffordshire Technical College—The Clerk to the Governors, Education Offices, North Street, Wolverhampton (Nov. 9). A secretary of the Institute of Physics and Editor of the "Journal of Scientific Instruments"—The President, Institute of Physics, 1 Lowther Gardens, S.W.7 (Nov. 20). A secretary of the Welsh National School of Medicine—D. B. Anthony, University Registry, Cathays Park, Cardiff (Nov. 21). A superintendent of Greenwich Park—The Secretary (1A), H.M. Office of Works, Storey's Gate, S.W.1 (Nov. 21). An assistant in the Art and Ethnographical Department of the Royal Scottish Museum—The Director, Royal Scottish Museum, Edinburgh (Nov. 29). An assistant lecturer in physical chemistry at the Manchester Municipal College of Technology—The Registrar, College of Technology, Manchester (Dec. 1). A principal of the Borough Road Training College for Men, Isleworth—The Secretary, British and Foreign School Society, 114 Temple Chambers, Temple Avenue, E.C.4. A teacher of workshop practice (metalwork and technical drawing) at the Sheerness Technical Institute and Junior Technical School—The Principal, Technical Institute and Junior Technical School, Sheerness. Two resident masters for engineering, metalwork, woodwork, art, at Old Swinford Hospital, Stourbridge—The Headmaster, Old Swinford Hospital, Stourbridge. A director of research and head of the Research and Standardisation Department of the Institution of Automobile Engineers—The Secretary, Research and Standardisation Committee, Institution of Automobile Engineers, Watergate House, Adelphi, W.C.2.