

made at the present time. The first two lectures were delivered in March to girls from London secondary schools by Mr. C. C. Paterson, director of the Research Laboratories of the General Electric Co., Ltd., Wembley, and have now been issued by the Guild as a pamphlet (Pp. 20. 1s.) entitled "The Electron Liberated; its Industrial Consequences". They deal with the emission of electrons from hot and illuminated surfaces and the uses made of them in modern electrical engineering, in particular in the production of light. The mysterious dual character of the electron as a missile and a group of waves is not forgotten, and the necessity for more and better knowledge of its properties is insisted on. The Guild is to be congratulated on the inaugural lecturer, to whom thousands of electrical engineers listened with such pleasure on the subject last year. The sooner other schools can have the benefit of lectures of this type, the better it will be for our future citizens.

Industrial Administration, at Loughborough College

FACILITIES for training in industrial administration and management are now increasing in Great Britain, the latest development being that at Loughborough College, where a Department of Industrial Administration was inaugurated last year. The courses provided are of an intensive nature, extending over short periods, and the aim is to provide a kind of staff college for industry where executives may be given an insight into a larger range of administrative practice than they would be likely to obtain in the ordinary way. The scope of the new department is thus somewhat different from those now well established at the Manchester College of Technology, or the London School of Economics, which provide courses extending over one or two academic years. The facilities provided at Loughborough include week-end, ten-day and longer courses adapted to the degree of experience of those attending. Instruction includes lectures, organised reading, group discussions, personal discussion of individual problems and visits to works and offices. It is intended that the week-end courses should be confined to executives with practical experience in the same industry, and in the first instance, these are being provided for engineering executives and will deal with such special topics as costing, rate-fixing and progress control. In the prospectus of the Department, it is pointed out that the various courses are of especial value to owner-managers who have not been able to acquire experience in other businesses, and to executives whose experience has been confined to a restricted field.

Meteorology of the South Seas

APIA OBSERVATORY, in Western Samoa, is under the control of the Department of Scientific and Industrial Research, New Zealand, and the work is directed by Mr. J. Wadsworth, formerly in the Meteorological Office, Air Ministry, who has recently presented his report for 1932 to the Observatory Board in the form of a compact and very clearly printed little volume of 114 pages. The report is a

summary of observations in terrestrial magnetism, seismology, meteorology and atmospheric electricity. Synoptic weather charts were made on every day of the year, the data being collected by the wireless station at Apia from twenty observing stations in other groups of islands in the South Pacific, and sometimes from passing ships. Since May 1932 a daily weather report has been exhibited at the Post Office and Customs House in Apia, at the request of local shipowners. Considering the small size of the staff, which consists of the director and two scientific assistants and four locally recruited clerks, the amount of work accomplished, especially on the purely meteorological side, seems highly satisfactory. Upper winds were measured with the aid of pilot balloons on seventy-eight occasions; the usual meteorological instruments were maintained, while in addition a Piché evaporimeter and a Wilson radio integrator were read daily at 9 a.m. The meteorological summaries are so detailed that a very clear idea can be formed of the weather experienced from day to day in this part of the South Seas; they include, also, less detailed climatological summaries from other groups of islands. An even fuller programme was contemplated, for arrangements were being made for re-conditioning and bringing into use a spectroheliometer which was obtained on loan from Mount Wilson Observatory.

Standardisation of Insecticides and Fungicides

THE standardisation of insecticides and fungicides has for some years been a matter of discussion among both the users and manufacturers of these chemicals, and requests from farmers and growers that the content of active materials in these products should be guaranteed resulted in the publication by the Ministry of Agriculture of specifications of a number of those most generally in use (Advisory Leaflet No. 9). To meet the recent great development in the employment of insecticides and fungicides, a further publication has now been issued by the Ministry, namely, Bulletin 82, "Specifications and Methods of Analysis for Certain Insecticides and Fungicides" (London: H.M. Stationery Office. 3d. net). In this bulletin, the specifications already published have been brought up to date, and additional specifications for certain compounds such as copper fungicides, not previously dealt with, have been included. In addition, agreed methods of analysis, drawn up in connexion with the specifications, are supplied. Both specifications and analytical methods have been accepted by the Association of British Insecticide Manufacturers, the Government Laboratory, the National Farmer's Union and the Ministry of Agriculture. Purchasers are strongly advised to require a guarantee that materials supplied comply with these specifications, for, by so doing, they ensure that they obtain standard products of high quality.

Lancashire Sea-Fisheries Research

THE report for 1932 (No. 41) on the Lancashire Sea-Fisheries Laboratory at the University of Liverpool (1933), edited by Dr. R. J. Daniel, is in

future to be incorporated with the *Proceedings and Transactions of the Liverpool Biological Society* and not issued separately. The present report includes accounts of experimental lobster rearing by W. C. Smith, plaice marking in the Irish Sea by R. J. Daniel and R. A. Fleming, and a comparative study of the abdominal musculature in Malacostraca (Part III) by R. J. Daniel. This last paper is a continuation of Dr. Daniel's work on the muscles of various Crustacea which have been published in the Lancashire Sea-Fisheries Reports in 1927, 1929 and 1932, and describes the musculature of *Lophogaster typicus* and *Gnathophausia zoëa*. The weight of evidence shows a close affinity between the Euphausiacea and the lower decapods, although there are apparent similarities between *Meganyctiphanes* on one hand and *Lophogaster*, *Gnathophausia* and *Praunus* on the other. It is concluded by the author, after very careful consideration, that the former represents a true relationship (homology) and that similarities between mysids and euphausiids are due to convergence. These researches on the abdominal muscles are carefully and beautifully worked out and are accompanied by fine drawings.

Welfare Problems in India

IMPENDING constitutional changes, which will affect welfare administration in India, add particular significance to two articles by Mr. Cedric Dover in the January issues of *Mother and Child* and the *Quarterly Review*. He discusses the organisation and condition of maternal and child welfare in India, and the needs and defects of welfare legislation. Maternal mortality rates are 4-20 times, and infant mortality rates 3-4 times as much as the averages obtaining in England, and are closely correlated with communal prosperity and housing conditions. An interesting biological correlation is that between climatic conditions and frequency of conceptions, the maximum number occurring in Bombay during the period of minimum humidity (January-April). Both articles emphasise the need for centralisation and greater co-ordination of welfare activities. A consolidated Public Health Act for all India is regarded as the primary essential of welfare legislation, and a commission on legal reform is suggested, which will recognise that "the main object of law is the prevention of dysgenic, and the encouragement and establishment of eugenic forces", unimpeded by traditional beliefs. The operation of Hindu, Mohammedan and Christian laws under one administration is dismissed as "an anachronism that needs no emphasis".

Commercial Timbers of the Punjab

A Forest Bulletin, No. 84, in the Economy Series of the Imperial Forest Research Institute, Dehra Dun, has been recently issued (Delhi: Manager of Publications, 1934) entitled the "Identification of the Commercial Timbers of the Punjab" by K. A. Chowdhury, wood technologist. The Indian Research Institute has been a pioneer in getting together information on the timbers of a definite region, having undertaken intensive research in the timber

resources of India during the past twenty years; with the result that the number of timbers now sold in the market is much greater than it was a few years ago. This fact, states the author, has resulted in difficulties in identification of some of the species which have now come upon the market. The aim of the Bulletin, and a predecessor on Burma timbers, is primarily to show the differences of the anatomical structure of some of the more commercial timbers of the Punjab, and the way to identify them on the spot with the assistance only of a hand lens and pocket knife. Brief notes are also given on the strengths, seasoning properties, durability, working qualities and uses for each species: these latter add greatly to the practical value of the publication. The commercial woods of the Punjab, of which a proportion are temperate species, both conifer and broad-leaved species, are comparatively few in number and their identification is by no means difficult. Those who make use of this Bulletin will find the excellent low power ($\times 10$) photomicrographs of considerable assistance. The species dealt with include the Himalayan conifers, deodar, spruce and silver firs, several pines and broad-leaved trees such as walnut, several oaks, box-wood, poplar and alder; and the Plains species, such as sál, mango, tun, sissou, tamarix and so forth.

Chemical Research in Czechoslovakia

UNINFLUENCED by the economic depression, which has been felt in Central Europe as keenly as elsewhere, the various schools of chemical research in Czechoslovakia have continued their activities with undiminished energy, as is apparent from the papers published in vol. 6 of the *Collection of Czechoslovak Chemical Communications*. In inorganic chemistry, Dr. Škramovský's 'stathmographic apparatus' has found further application in the study of complex inorganic salts such as the bismuth oxalates. The apparatus automatically records photographically the change in weight of a substance with, for example, increasing temperature. Striking dehydration curves have been obtained and results are found to vary according to well-defined circumstances. Thus copper sulphate crystals from aqueous solutions show quite different behaviour from those from alcoholic solutions. Further, inoculation with lower hydrated salt causes characteristic changes in the curves photographically recorded. The stathmographic method thus seems to promise a new field of investigation in inorganic chemistry. In physical chemistry, the Prague polarographic school has published further work especially in connexion with the catalytic evolution of hydrogen at the dropping mercury cathode, which can be made use of in micro-analytical tests. Revenda's work in Prof. Heyrovský's laboratory has extended the applicability of polarographic analysis to the anions. In organic chemistry, the *Collection* includes results of researches by Prof. Votoček and his collaborators on new conversions of sugars to furane compounds. New glucosyl-alkyl-amines are described, and the constitution of fuco-hexonic and rhodeo-hexonic acids has been worked out.