

the cases and sickness for 9 per cent. Insufficient wages account for 21.3 per cent of all families below the standard.

British Chemical Plant

THE reference in the leading article in NATURE of January 28 to the report of the Association of Scientific Workers, and more particularly to the urgent need for more State assistance for fundamental research, receives further emphasis from a recent discussion by the British Chemical Plant Manufacturers Association, following an earlier meeting in May 1938. In the report above-mentioned it was specifically indicated that among the more urgent and important cases where State support is required is that of chemical engineering, notably in connexion with raw materials and unit operations. Although the discussions of the B.C.P.M.A. were at first intended to be limited to the question of closer collaboration between chemical manufacturers, chemical plant manufacturers and consultants, with the view of quoting for and providing complete process units, it soon became evident that the scope of debate would have to be extended to include co-operation on much wider grounds, including not only fundamental scientific research but also the economic question of meeting foreign competition effectively. It was not easy to come to any definite decision or formulate a constructive policy of basic research: this is a matter for further discussion between the main sections of the chemical industry and the Government. When one considers, however, the strenuous and for the most part successful efforts of recent years to place chemical engineering in Great Britain on a sounder basis, it is to be hoped that the matter will not be left where it is, in view of its supreme importance in regard to national well-being, export trade and defence.

ON the question of more effectively meeting foreign competition, some plant manufacturers find that there appears to be a tendency both on the part of certain Government departments and of some of the chemical manufacturers to assume too readily and complacently that the British makers of chemical plant and apparatus are sometimes unable or unwilling to tender for complete process units, especially in connexion with new processes; and that this assumption has apparently formed the ground, or one of the grounds, for applications for licence to import foreign plant. The real truth, as was clearly shown at the last informal discussion of the British Chemical Plant Manufacturers Association, is that the need for these complete tenders from one firm is more infrequent than commonly supposed, and that, when it really does arise, the British manufacturer of plant is quite as well able as his foreign competitor to supply complete tenders if the inquiries are genuine and are accompanied by full details and complete designs. The allegation therefore that, whilst German or American firms will supply complete specifications and prices for the whole plant, it is necessary to apply to several different British firms for the various parts, with

consequent greater delay, inconvenience, and enhanced cost, is not quite fair. Nevertheless the fact remains that much foreign plant has been and is still being imported. In addition to this discouragement, the British maker has to face ruthless Government-subsidized competition in foreign markets, and should therefore receive the greater support from his colleagues in the chemical industry and from the Government at home.

Some Earthquakes Registered in 1937

WE have received from Dr. W. Hiller the data concerning earthquakes registered at Stuttgart, Ravensberg and Messtetten-Ebingen in 1937. Stuttgart is now equipped with three Galitzin-Wilip seismographs orientated north-south, east-west, and vertical, one Wiechert vertical seismograph of mass 1,320 kgm., two Mainka seismographs of mass 450 kgm. set north-south and east-west, a seismograph of mass 80 kgm. orientated east-west and a horizontal Wiechert instrument of mass 17,000 kgm. Ravensberg has two Mainka pendulums of mass 450 kgm. orientated north-south and east-west, and two Conrad seismographs of 23 kgm. also set north-south and east-west. Messtetten-Ebingen is equipped with one vertical Wiechert instrument of mass 80 kgm., and two horizontal pendulums of mass 80 kgm. orientated north-south and east-west. The full list of constants for all these instruments is given. The main part of the report concerns the 426 earthquakes registered at these stations during 1937. For each shock recorded a full list of readings, including date, registering station, component, phase, arrival time, period, amplitude in μ , and remarks chiefly concerning the epicentre and epicentral distance from the station, is given. Lastly, there follow two valuable additions to the compilation. First comes a tabulation of microseisms registered on the Galitzin-Wilip seismometers at Stuttgart, including the period and amplitude in μ on the three components, and secondly a careful study of the Hohenzollernalb earthquake of June 17, 1937. The epicentre of this is found to be $48^{\circ} 15.3' N.$, $9^{\circ} 12.4' E.$, $\pm 2-3$ km., depth of focus 19-20 km. \pm about 4 km., and T_0 9 h. 56 m. 41.8 s. ± 0.3 s. The publication forms a very valuable addition to the data and literature of seismology.

'Commercial' Water Culture of Plants

AN amusing example of the way in which the publicity of the Press may embarrass scientific workers is provided by the need for Circular 347 of the Agricultural Experiment Station, Berkeley, California, in which D. R. Hoagland and D. I. Arnon have to try to dispel illusions about the commercial possibilities of growing plants by water culture. The authors point out that the technique of water culture contains nothing new and has indeed been employed for more than a quarter of a century by this experiment station, whilst the method was, of course, described by the German physiologist Sachs in his text-book about 1860. The California Experiment Station must rue the day that Dr. W. F. Gericke conceived the idea that the method might have some

commercial application. A Sunday supplement article pictured a housewife opening a small closet off the kitchen and picking tomatoes from vines growing in water culture with the aid of electric lights, whilst a large chain of restaurants in New York City were credited with growing their own vegetables in basements. Actually, as the authors of this circular make clear, whilst very good yields may be obtained under glass from many crops grown in water cultures, with equal attention, similar or better crops may be grown in soil by methods which are more familiar to the amateur and professional grower.

Foam on the Dead Sea

A PECULIAR phenomenon often to be seen on the northern waters of the Dead Sea is that of arcs of foam, more or less semicircular, spreading out fanwise from certain points of the west and east shores. The arcs seem to spread from the shores in early morning and often meet and even cross during the forenoon. These lines of foam often bear reeds and other vegetation debris that have reached the Dead Sea by inflowing rivers, and, at the seasons of migration, the foam may attract flocks of birds searching for food. Dr. D. Ashbel has recorded some of his observations on this phenomenon and offers an explanation (*Geog. Rev.*, Jan. 1938). The arcs originate from springs on the two shores, and they make discontinuities between bodies of water of different salinity and density. When the outflow of the springs is strong, the arc is frequently not smooth but zig-zag. This explanation contradicts the earlier one of Blanckenhorn that the lines of foam originate from warm water arising along lines of fault on the sea floor. That suggestion does not explain lack of replacement of the lines as each moves forward, which Dr. Ashbel thinks is due to the gentle winds that frequently blow from the land on to the sea during the night and early morning. These winds do not ruffle the water and so mixing does not occur. Gusty west winds such as often occur in the afternoon cause mixing and so the lines of discontinuity disappear.

The Imperial College of Tropical Agriculture

THE Imperial College of Tropical Agriculture in Trinidad is now the recognized centre for post-graduate training in tropical agriculture for the agricultural services of the Colonial Empire. The governing body in its latest report for the year ending August 31, 1938, record that 159 past students of the College have been appointed to the Colonial Agricultural Service and allied services, posts being now held in thirty different parts of the British Empire. The year under review was marked by the retirement of Sir Geoffrey Evans, who had filled the office of principal with much distinction since 1926, and who left the College with its function in the development of agriculture throughout the Colonial Empire firmly established, and with an international reputation as a centre of education and research. Mr. Odin Tom Faulkner, lately director of agriculture

in the Straits Settlements and adviser on agriculture in the Malay States, was appointed to succeed Sir Geoffrey Evans. During 1937-38 the work of the College proceeded on normal lines. Research was mainly concerned with problems relating to cacao, sugar, bananas and citrus fruits, and the cost of much of the work was met by contributions from firms connected with the appropriate industry. The governing body is anxious to raise a substantial endowment fund; but its hope that the grant of £32,000 made by the Carnegie Corporation in 1932 towards this object would be followed by contributions from British firms and others interested in tropical agriculture has yet to be realized. Capital is also required for the purchase of more land for the college farm, for additional laboratories and the reconstruction of the biological building.

The British Association: Engineering Section

AT the Dundee meeting of the British Association, 1939, the Engineering Section proposes to repeat the arrangement which proved so satisfactory during the meeting in Cambridge last year and to devote some time to the delivery of a number of short communications by junior engineers or research workers (under the age of thirty years). Each speaker will be allotted a total of 20-30 minutes, which may, at his option, include, say, ten minutes for very short discussion. It is hoped that each author will describe some item of special interest or novelty upon which he may be engaged. This innovation seems to us important as enabling the Association to know something of the work of younger men, and enabling those men to gain experience of summarizing their work and putting it forward for criticism without having to undertake the much more laborious task of preparing a paper of the stature necessary for a full meeting of one of the engineering institutions or of a scientific society. Although *Engineering* publishes *in extenso* the text of all main papers delivered to the Section, it is not proposed that these short papers should similarly be published. This arrangement seems desirable, partly because authors may be prepared to describe engineering work upon which they hope later to publish a full-scale paper, and partly because authors may not feel justified in preparing a text of the completeness which would be desirable if proper publication is to be made. Those wishing to submit such papers should communicate immediately with the recorder Wing-Commander T. R. Cave-Brown-Cave, University College, Southampton.

Spectrochimica Acta

THE first number of a publication under the above title will shortly be issued by Messrs. Julius Springer, Berlin, under the editorship of W. Gerlach and G. Scheibe, Munich; A. Gatterer, Vatican Observatory; R. Breckpot, Louvain; F. Twyman, London. It will deal solely with spectrochemical analysis, and a useful feature will be the publication of abstracts and reviews of books and articles on the subject. A number of authorities on the subject have agreed to collaborate, and those in the English-speaking