

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  $\mu$ , 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  $\mu$  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.  $\pm 0.3$  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