

before operations upon so large a scale can be commenced. Mistakes there are bound to have been, but that the company has made a definite step towards its objective, and towards the assurance of a national supply of dyes for this country, cannot be denied. On the other hand, what has been accomplished is but small in comparison with what remains to be done; for the large plants visited produce but a small fraction of the total number of intermediates that are of primary importance. Despite this, when the actual progress that has been made by British Dyes, Ltd., and by other firms, in the face of the great difficulties of the times, is fairly surveyed, the confidence that British chemists and engineers can place the country in a position of independence as regards dyes is confirmed, but it is also clearly seen that this result can only be achieved by years of strenuous work, by co-operation, and with the aid of sympathetic national support of the industry. A. E. E.

#### SCIENTIFIC PROBLEMS OF REFRIGERATION AND COLD STORAGE.

A COMMITTEE has been set up by the Food Investigation Board of the Department of Scientific and Industrial Research to consider engineering and physical problems which arise in connection with the use of cold to preserve food, and to organise such research on these subjects as may be considered necessary.

The Committee consists of Sir Alfred Ewing (chairman), principal, University of Edinburgh; Sir Richard Glazebrook, director, National Physical Laboratory; Commr. C. F. Jenkin, professor of engineering science, Oxford; Mr. S. R. Beale, of Messrs. Louis Sterne and Co.; Prof. H. L. Callendar, professor of physics, Imperial College of Science and Technology; Messrs. G. C. Hodsdon and F. A. Wilcox, of Messrs. J. and E. Hall, Ltd.; Prof. C. H. Lees, professor of physics, East London Technical College; Mr. A. Macdonald, superintendent engineer of the Commonwealth and Dominion Line, Ltd., of the Cunard Line; Mr. J. T. Milton, chief engineer surveyor of Lloyd's Register of Shipping; Mr. W. B. Statham, of the Messrs. Lightfoot Refrigerating Co.; Mr. J. Thom, chief engineer of the London Central Markets Cold Storage Co.; and Mr. A. R. T. Woods, general manager of the H. and W. Nelson Line.

The terms of reference to the Committee are exceedingly wide, so that its activities may be as little hampered as possible. They cover refrigerating machines and the insulation of cold stores in general, and in particular the application of refrigeration in ships, barges, and railway vans for the conveyance of produce at low temperatures, and the methods of measuring the temperature and degree of moisture in closed spaces.

The Committee may be said to be taking up work at the point at which it was left by the Refrigeration Research Committee of the Institution of Mechanical Engineers, but with greatly extended terms of reference. That committee, which was also under Sir Alfred Ewing, was appointed to define a standard in refrigeration, and the valuable results of its deliberations were issued as a report of the institution in October, 1914.

In setting up the present Committee an attempt has been made to include experts representing each division of the subject, and in attempting a general survey of the scientific problems which press for solution on the engineering and physical sides the Committee will be guided by the first-hand knowledge of its members. It includes engineers with much ex-

perience in the practical work of refrigeration, and also physicists familiar with the methods of experimental research which are likely to be relevant.

No single committee, however, can hope to possess an exhaustive acquaintance with all aspects of so wide a question. The work will therefore be helped forward by suggestions received from without, and the Committee would welcome suggestions as to specific questions on which further knowledge is needed. Any communication should be addressed to the Secretary, Sir Alfred Ewing's Committee, Scientific and Industrial Research Department, 15 Great George Street, Westminster, S.W.1.

#### PRESENT AND PROSPECTIVE FOOD SUPPLIES.

RECENT reviews of the outlook for food supplies after the war have been so uniformly pessimistic that a note of comparative optimism from so eminent an authority as Sir R. Henry Rew is doubly welcome at the present juncture. In his address to the Royal Statistical Society on December 18 last (Journal of the Royal Statistical Society, January, 1918) Sir Henry was able to arrive at the conclusion that the prospects of food supplies for the hungry world after the war are at least not hopelessly gloomy, although indeed his considerations were limited solely to supplies, and did not cover the problem of transport.

Dealing first with breadstuffs, and reviewing the existing position as regards production and requirements in the chief importing and exporting countries, he deduced that although there is an immediate deficiency of normal breadstuffs, available to meet the existing demand, there is no shortage in the world's supplies as a whole, if Australia be included. Moreover, the shortage affects only the northern hemisphere, and, so far as can be judged, the wheat crops south of the equator will compensate for the deficient wheat crops north of it. As to the food situation which will exist when the war ends, it is by no means certain that the Central Powers will draw heavily upon extra-European sources of supply, since their needs will probably be met adequately from Russia and the Balkans. Another factor which must be taken into account is the reduction in the number of bread-eaters in the countries at war. It is difficult to assess the present reduction of food requirements from this cause at less than one million tons of cereals alone. Moreover, it is probable that demobilisation will lead to a reduction in the average food consumption per head of the men affected, and that the general economy in the use of food which war conditions have engendered will persist for a considerable period.

As regards meat, there has been a serious reduction in the number of cattle, sheep, and pigs in Europe during the war, but, on the other hand, a very substantial stimulus has been given to the overseas trade in meat, and sources of supply hitherto almost untapped, such as Brazil and South Africa, are being steadily developed. On the whole, therefore, Sir Henry found reason to believe that there are, and will be, adequate supplies of meat in the world to satisfy the demands of carnivorous Europe, again assuming, as in the case of breadstuffs, that they can be shipped. Transport is thus obviously the dominant factor, and no optimism as to the world's supplies can modify the grave fact that the most rigid economy of food is essential throughout the war, since the food available is limited, not by the world's supply, but by the quantity which can be brought to, or produced in, the country which needs it.

The optimism expressed in the paper was not entirely shared by speakers in the subsequent discussion,