

The high-temperature nitration of paraffins and substitution chlorination of olefines are recent technical developments of great significance. The α -methylene halogenation reaction can now be conveniently effected in the laboratory under mild conditions by employing N-bromosuccinimide. The remarkable orientating effect of organic peroxides on the addition of hydrogen bromide to olefines has led to the discovery of other chain reactions, of considerable preparative value, initiated by these trigger catalysts.

THE GRID AND SECONDARY POWER STATIONS IN GREAT BRITAIN

IN a paper entitled "The Effect of the National Grid on the Operation and Maintenance of Secondary Power Stations" read before the Institution of Electrical Engineers in London on April 1, R. A. W. Connor discusses the status and function of these stations in relation to the Grid in Great Britain, together with some of the running and maintenance problems brought about by Grid operation, and some of the factors affecting cost of production. The paper directs attention to the important part played by the secondary power stations, the efficient and economic operation of which has undoubtedly contributed in no small measure to successful Grid operation, and to the benefit of the supply industry as a whole.

The following conclusions are reached as a result of the study. The general shape of the national load curve will remain for many years and will not necessitate radical changes in station design. The reclassification of every station through its normal working life must continue, and it would be uneconomic to lay down plant or stations specifically to deal with peak loads only. Future load curves may exhibit exceptionally high rates of change of loads during certain periods, but the capacity of secondary stations will increase and it is unlikely that any new plant will have to be relegated to secondary duties until some years of primary station duties have been completed.

Improvement in the average thermal efficiency of secondary stations will continue owing to the relegation to this class of more modern stations with higher steam pressures and temperatures. There is scope for further improvements in operation and maintenance, although running conditions and high banking losses impose a lower limit on station efficiency than is the case with base-load stations. Grid operation with its daily cycle of temperature changes has affected maintenance and repair work in secondary stations, but not seriously or to the detriment of plant.

Owing to the large variations in output encountered under two-shift, one-shift and peak-load operation, and also due to the high fixed-cost component, all station costs tend to vary in inverse proportion to the kilowatt-hour output, and comparisons need very careful interpretation to be of any value. A characteristic curve, hyperbolic in shape, correlating output and cost, can be built up for any station. Most secondary stations are called upon at varying intervals and seasons to work with very low outputs, in which region the characteristic shows a very sharp upward trend. Due to the predominating effect of running conditions on thermal efficiency and to the

sharp upward trend of the unit cost at low outputs, many secondary stations have suffered reductions in thermal efficiency and increased costs as a result of Grid operation. This, however, has enabled the primary stations to operate under base-load conditions and the full financial advantages of Grid operation to be realized.

LOCATION OF INDUSTRY IN GREAT BRITAIN

THE paper on "Location of Industry" which Mr. R. G. Glenday, economic adviser to the Federation of British Industries, delivered before the Royal Society of Arts on February 10, roundly challenges current views on the location of industry, including some expressed in the Barlow Report, but his emphasis on the background of change against which the problem of industrial location should be viewed cannot fail to be stimulating, although apart from its provocativeness his paper offers little in the way of constructive suggestion. Fundamentally, Mr. Glenday reminds us, the problem of locating a country's industries and urban centres is part of the larger problem of adjusting a population to its environment, and it is the exceptional rate of growth of populations and industries during the last century and a half that has given rise to so many acute economic problems to-day. He regards the closing of the channels of international movement, following on the disappearance of the geographical frontiers of the civilized world by the first decade of this century, as the major event responsible for bringing to a close the era of democracy and free capitalism in many parts of Europe.

The problem of industrial location must be examined against this background, and Mr. Glenday argues next that the two main factors which determined the location of industry in Great Britain, particularly the move northwards in the nineteenth century, were, first, the development of the railway and steamship, coupled with the adoption of free trade, and, secondly, the development of road transport and electrical transmission in the twentieth century. With this, from 1931 onwards, was associated a re-direction of the 'growing-point' of Britain's industrial energies to home rather than to export activities. Most discussions on the location of industry tend to under-estimate the effect of such basic structural innovations, which affect the general lay-out as well as the skeleton of the economic system.

Mr. Glenday, like the Federation of British Industries, seems to be rather obsessed with difficulties, but more creative and adventurous minds may profit by his warnings without being deterred by them. He rightly directs attention to the importance—and the difficulty—of deciding which industries and occupations are essential parts of developing urban structures and which can be regarded as independent and mobile. He stresses also the vital importance of timing in industrial progress. The two main questions which require examination in regard to post-war location are first, the probable size and quality of the population involved, and secondly, the probable direction of the forces of economic evolution affecting the occupation of that population. In regard to the first, he observes that in the main the question will be the redistribution of a stationary or even a declining population; and in regard to the second,