

metric tons above the output for the corresponding period of 1947. Output per man-shift rose from 1.02 metric tons in 1945 to 1.05 in 1946 and 1.09 tons in 1947, and is currently about 1.12. Exports and foreign bunker shipments have increased from 5.4 million tons in 1947 to the current rate of 20 million tons a year. The commitment to supply 13 million tons of solid fuel exports to participating countries and bunker shipments in 1948, promised in Paris in July 1947, is well on the way to fulfilment. Substantial shipments are also being made to the American continent. The sharp rate of increase in exports is, however, partly due to a reduction in stocks at home which cannot, of course, continue. Consumption in the United Kingdom has been kept down by restrictions on the use of domestic coal, gas and electricity, by the more efficient use of fuel, and by the effective use of the dirtier coals which have had to be used because of the shortage of cleaning plant.

83. The aims are to produce over the next four years sufficient coal and coke to meet all the requirements of this country at the lowest possible cost in materials and resources, to ensure that the solid fuel needs of Europe will be fully satisfied from European (and in large part from British) sources, and to increase shipments to South America and Canada. So long as abnormal conditions prevail it is only possible to guess at the level which internal demand would reach were supplies freely available. In the export markets uncertainties exist as to the speed of industrial recovery in the participating countries, the availability of additional supplies of solid fuel from Germany and Poland, the total European demand for solid fuel, the prospects of selling British coal in South America, Canada and other distant markets, and the availability of particular qualities of coal. The appraisal of these prospects is clearly a field for European consultation. It has been assumed, however, that demand for United Kingdom exports and bunkers will reach by 1952-53 a level of 40 million metric tons. It should be practicable to meet that demand with a total production (including opencast production) of between 250-260 million metric tons. This will require over the next four years an increase of some 40 million metric tons of deep-mined coal. It implies an annual increase of about 5 per cent. in output per man-year, a rate substantially higher than has ever been sustained for a long period by any large section of industry. To achieve such an advance will involve a tremendous effort. It means nearly doubling the rate of expansion thought possible for other industries.

84. All this will have to be achieved in the early stages of a long-term programme, involving radical reconstruction of the whole industry, which is expected to extend over a 15-year period. A rapid development in productivity during this time will be hard to achieve, especially as it will necessarily take a long time to complete the underground haulage reorganisation, and the design and construction of large-scale surface cleaning plant, upon which much reliance must be placed for increased productivity and improved quality. Every effort will also be made to reduce internal consumption by the more efficient use of our fuel supplies—a field in which very considerable success has already been achieved.

85. Underground haulage productivity must be raised as quickly as possible from the present figure of about 5 tons a manshift to 20-25 tons obtained in the most modern European mines. This is largely a matter of replanning and driving tunnels for locomotives. For reasons of working space the speed at which tunnels can be driven is limited, and, because of the age of British coal mines and the great distance of most workings from the deep shafts, these new tunnels must be long. Improved haulage will make mining operations run more smoothly and release men in considerable numbers for face work.

86. Many surface cleaning plants are already in hand, and plants ordered or projected should be able by 1952 to deal with 70 per cent. of total coal output. These plants will release men from hand picking coal, and the coal produced from them will be burnt at higher efficiencies.

87. Productivity at the coal face is already highly mechanised with 75 per cent. of the output mechanically cut and face conveyed in 1947. The chief means of improved productivity by further face mechanisation must, therefore, be looked for in the installation of mechanical loaders. Geological conditions in the British coalfields, however, do not lend themselves readily to this form of mechanisation by reason of the great depths at which many seams are worked with consequential difficulties in roof control.

88. During the four years ending December 1952 the Coal Board expect to invest nearly \$600 million on development and reconstruction, including plant replacement. A large part of this expenditure will be devoted to the three principal mining activities referred to above. In addition it is proposed progressively to close down the less efficient mines, to concentrate working within existing collieries, and to undertake an extensive programme of drift mining. At the same time plans are being worked out for the major reconstruction of existing collieries, new sinkings and the like, which can hardly be expected to yield any considerable returns by the end of the period.

(3) OIL

89. The world's current consumption of oil is already 70 per cent. higher than in 1938. The United States of America's present consumption alone is about equal to the world's total consumption in 1938, and as the United States of America has now become a net importer of oil—it has been for years a very considerable exporter—the shortage for the rest of the world is an acute problem. A very large expansion of oil production is, therefore, necessary if economic recovery in Europe and the development of those territories to which Europe must increasingly turn for her supplies of food and raw materials are not to be retarded.

90. The United Kingdom has a special interest in the expansion of oil supplies. In spite of the fact that the output of the British oil companies is much greater than consumption in the United Kingdom, particularly at the very restricted level which it has imposed upon itself, the oil industry makes at present the largest single claim for dollar expenditure. The British-controlled oil companies are engaged in a highly complex foreign trade. Their activities involve large dollar expenditure both for operating expenses and the purchase of equipment. In addition, large quantities of oil are still having to be purchased by British companies from United States companies to meet their market requirements in non-dollar areas. A substantial part of this dollar expenditure is incurred in order to make oil available to the participating countries of Europe. In all, the British companies sold for inland consumption over 10 million metric tons of oil to the participating countries (excluding the United Kingdom) in 1947. This will rise to about 13 million tons in 1948 and will then constitute 40 per cent. of their total estimated oil supplies. These supplies are essential to the economic recovery of the participating countries; trade and industry would be most seriously dislocated if they were withheld. When it is appreciated that this assistance to recovery and development of the European recovery is made at the cost of a substantial drain on the United Kingdom's gold and dollar resources it will be realised that the United Kingdom's oil supplies constitute an altogether outstanding immediate contribution to European collaboration.

91. To deal with this situation oil production and refining capacity by British companies are being expanded both to reduce the need to purchase oil from dollar sources and to enable more oil to be sold to dollar purchasers. British companies (including under this heading the Royal Dutch Shell group) produced 46 million tons of crude oil in 1946 and nearly 54 million tons in 1947. This year it is hoped to increase production to 64 million tons. In 1953 the expansion of the industry should yield approximately double the 1947 output.

92. The main contribution will come from the development of concessions held outside the dependent overseas territories, principally in the Middle East and Venezuela. Production in British Borneo and Trinidad, about 4½ million tons in 1947, is expected to increase to about 6 million tons, as a result of extensions in hand.

93. An important feature of the expansion programme is the development of refinery capacity. A large industry will be established within the United Kingdom capable of treating nearly 20 million tons of crude oil a year, compared with a through-put of 2½ million tons in 1947. Seven new refineries or major extensions will be erected in the United Kingdom at an approximate cost of \$500 million. Work has already begun on three of them. This ambitious project will make a major change in the oil position of the United Kingdom. Imports of crude oil will increasingly replace imports of refined products and give rise to large savings in foreign exchange.