

REVIVAL IN
SCOTTISH
SHALE OIL
INDUSTRY

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A MUCH IMPROVED OUTLOOK:
HOME FUEL RESOURCES

BY A SPECIAL CORRESPONDENT

The announcement regarding the expansion of the Scottish shale oil industry—made by the Secretary of State for Scotland in the House of Commons on 9th November, in the debate on the address on the King's Speech—drew attention once more to what Mr. Colville referred to as "this old industry which has been through a very bad time." It may be opportune to point out what this industry is and what its history has been.

It was started nearly 90 years ago in the days when domestic lighting and the lubrication of machinery depended almost wholly on the malodorous and rather unsatisfactory products of the whale and seal fisheries. The mineral oil which it provided for these purposes set new standards both of efficiency and cheapness. At first these oils were distilled from the so-called Boghead

coal, which was almost restricted in its occurrence to a few localities in Scotland. This was soon worked out, and attention had to be turned to a similar, but much poorer, material, the oil shale, occurring very abundantly in the Scottish Lothians.

MEETING COMPETITION

Such shale gave a much smaller yield of oil, but it was much more abundant, also cheaper, and permitted great expansion of operations. This expansion was, however, a matter of great difficulty in the face of severe competition from imported natural petroleum, which had come on the market here in the early 'sixties. To meet this competition those engaged in the Scottish shale industry showed great resource in improving and cheapening their processes, and in obtaining new products, particularly those which were not affected by the flood of cheap petroleum.

Notwithstanding the very unequal competition, the operations of the industry grew pretty steadily. In the period just before the war, the output of shale in the three counties—West and Mid Lothian and Lanarkshire—in which the industry was carried on amounted to no less than $3\frac{1}{4}$ million tons per annum. That the industry was able to exist at all seems something of a miracle when it is remembered that to obtain some 25 gallons of crude oil a ton of shale had to be mined from deep beneath the surface of the earth and then put through an expensive retorting process.

WAR-TIME PROSPERITY

The crude oil thus laboriously obtained is practically an equivalent to the natural petroleum which gushes

forth so plentifully from the wells of the petroleum fields. From that point the operations of the two industries are roughly parallel and the products from the two sources are sold in the same markets and for the same purposes, prices being ruled not by costs in the shale industry but by those of the petroleum industry.

Notwithstanding such natural disadvantages and rather frequent periods of extreme depression, the industry had considerable local importance, and a number of the companies were able to make handsome profits. During the war the industry became of national importance, as it was the only source within this country of mineral oils and paraffin wax, and was also one of the largest producers of ammonia, an essential for the manufacture of explosives.

With the close of the war, the industry entered a period of intense difficulty. All costs of manufacture in this country remained at a high level while markets here were flooded with surplus petroleum from abroad, the production of which had been stimulated to meet war-time needs and the demand for which had suddenly shrunk to less than a normal peace-time level. Prices fell rapidly, while costs at home still tended to rise through the effects of the labour difficulties which were pretty general throughout the country during this period.

A STRONG ALLY

The first step towards meeting this situation was the grouping of the half-dozen companies into one organisation—Scottish Oils, Ltd.—and the formation of an alliance with the Anglo-Iranian Oil Company, Ltd. (then the Anglo-Persian Oil Company,

Ltd.). This, among other things, secured access to supplies of crude petroleum, which would enable refinery and marketing organisations to be kept in operation, even if the manufacture of oil from shale should cease to be practicable. For a time stable conditions were attained, and then overproduction abroad with dumping of products in the British market produced a fresh crisis.

In the immediate pre-war period the industry drew one-half of its entire income from sulphate of ammonia obtained in the course of the retorting process. During the war the great developments in the manufacture of analogous products from atmospheric nitrogen, undertaken in many countries for military purposes, resulted in great overproduction for peace-time requirements. Together with reduced purchasing power in many markets, this affected the value of this product so seriously that it practically ceased to bring any income.

VARIETY OF PRODUCTS

Thus, deprived of what had long been its mainstay, the industry had again to depend for existence on oil products, of which it made a great variety. They included motor spirit, solvents for industrial purposes, oils for lighting and use in oil engines, oils for gas-making and cleaning machinery, light lubricating oils, fuel oils for boilers and internal combustion engines, paraffin wax, mainly for candle manufacture. With successive waves of overproduction in the petroleum industry and low prices, which affected even the prospects of petroleum companies much more favourably placed than the shale oil industry, the latter was compelled to jettison one group after another of its mines and works.

At the close of the war the industry consisted of about 25 mines, from which a daily supply of ten thousand tons of shale was drawn; 12 retorting plants, in which crude oil and ammonia were produced from this shale; and five refineries, in which were manufactured the finished products for the market. It also operated 2 candle works, for the conversion of paraffin wax into candles; 2 coal mines, for the supply of part of the industry's fuel requirements and 3 plants for the manufacture of sulphuric acid to be used in refining, etc. In these operations about 10,000 men were directly employed, while a total population of about 40,000 was dependent directly or indirectly on the operations of the industry.

OPERATIONS CURTAILED

As a result of the increasing economic pressure, the scale of operations has been reduced to an annual output of about 1½ million tons of shale, drawn from 11 mines, distilled in 5 retorting plants, the finished products being manufactured in one central refinery.

In 1932, when the number of men employed by the industry had fallen to about 3,500, with many former employees idle in the district, the company launched a scheme to restore a number of these men to employment. The extra income derived from an advance in the price of petrol was utilised to raise the rate of wages in the industry, while the men then employed were given one idle week in four, and this enabled nearly 1,000 extra men to be engaged.

The advance in wages, together with unemployment benefit in respect of the idle week, enabled the income of all

but a few of the highest paid men to be maintained at the same level over a four weeks period, while the earnings of these re-employed were at the same level. This unique scheme has been of great benefit to the community by increasing the number of men in regular employment, but is now in process of being suspended.

When the duty on petrol (4d per gallon) was reimposed some ten years ago, with exemption for home production, the industry concentrated its attention on producing the utmost quantity of motor spirit in order to obtain the fullest benefit from the preference, and the manufacture of less profitable products was reduced or abandoned. A few years later, a further drop in market values again undermined the position, notwithstanding the increase in preference which had by then taken place, and another shrinkage in the scale of operations occurred.

PROFITABLE DEVELOPMENT

Prospects for the remainder were again becoming unfavourable when in 1934 fuel for the compression-ignition engine, which had developed rapidly, was put on the same footing as petrol as regards taxation—that is, a duty of 8d per gallon was levied on it, but with exemption for the home product. It then became profitable for the shale industry to produce a fuel of that type also, resulting in a considerable improvement in prospects, and the excellent fuel from shale is now in extensive use by heavy transport.

At that date, the first step in recovery was taken when mining developments were begun to replace a number of mines which were approaching exhaustion. Soon afterwards, the re-equipment of the

refinery was undertaken to enable it to operate more effectively under the new conditions. These changes have reduced still more the range of products manufactured, the list being now limited to motor spirit, light Diesel oil, paraffin wax, ammonium sulphate and paraffin coke.

With the adoption by the Government some months ago of the recommendation of the Falmouth Committee that the preference on home-produced fuels for the internal combustion engine should be guaranteed for 12 years, the outlook of the industry has greatly improved, rendering possible the expansion recently referred to by the Secretary for Scotland. Three new mines are at present in process of sinking, preparations are in hand for the reopening of mines abandoned some time ago but not exhausted, and plans are being prepared for fresh openings to enable increased output to be furnished, and a completely new retorting unit is to be erected near West Calder.

It is expected that this activity will enable the Spreadover Scheme, already referred to, to be completely superseded—that is, instead of a proportion of the present personnel of approximately 5,000 being employed in rotation three weeks in every four, it is hoped to employ all on full time, and that ultimately some extra men will be required. All this will mean a great deal for the rural district in which the industry is carried on, and it will also result in home resources being more fully exploited to meet national requirements.