

WAR COMES TO THE POTATO PATCH

How The Nazis Make Ersatz Motor-spirit

Frequently one hears in the course of the news bulletins from London that the bombers of the R.A.F. have been over Hamburg or Stuttgart or Posen or some such place, and have dropped their cargoes on important "synthetic fuel" plants. And one is appropriately gratified, since such action strikes at the sinews of the enemy's mechanised warfare. "Synthetic fuel" actually means petrol produced from coal by a chemical process. Factories of this type are few in number, as the results of the process are extremely problematical and the quantity produced, even in war-time, negligible. The targets referred to in the news, in most cases, are "motor-spirit" factories. What is done in these factories before the bombs hit them is not general knowledge in New Zealand. A few people may have some knowledge of the theoretical chemistry behind "ersatz" motor-spirit, fewer still know anything of its practical application.

Otto Hubscher, the Czech violinist, who has been heard frequently from station 1YA, has practical experience of this motor-spirit manufacture, having been employed for some time prior to his departure for New Zealand in a factory of this type at Prague. To the Auckland representative of "The Listener" he described the methods employed in such plants and he had something to say, too, about the oil-fuel position in Europe generally.

MOTOR-SPIRIT plants in Europe, said Otto Hubscher, were not solely the result of war or of the preparation for war. There were various reasons for the establishment of the industry. In the first place, Rumania was the main source of the supply of mineral oil for the countries of Central Europe, but to get these supplies they had to be paid for in dollars or sterling. Conservation of dollar and sterling

It should be noted, however, that the synthetic spirit fuel was not intended wholly to take the place of natural petrol but to supplement it, and this intention was generally enforced in the various countries by regulations providing for the mixing of motor-spirit with petrol, the proportions being up to 25 per cent. of spirit to 75 per cent. petrol.

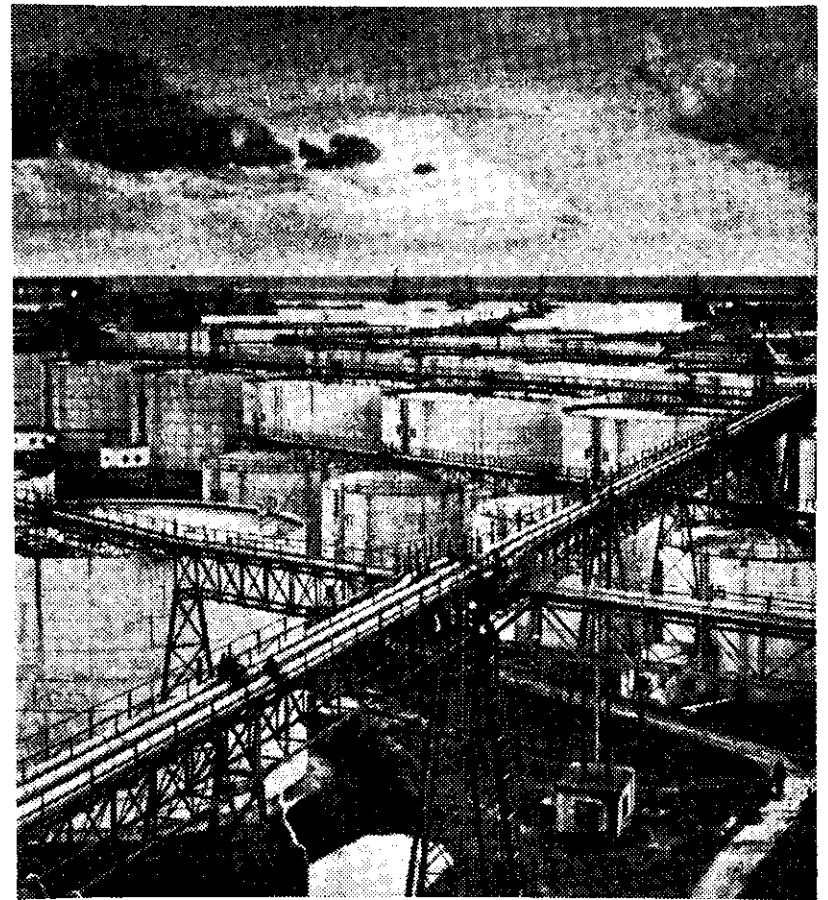
This mixture, said Mr. Hubscher, is fit for use in any car without adjustment of the engine, but if the amount of motor-spirit added exceeds 30 per cent., engine adjustment is necessary. It was quite possible, however, so to adjust the engine that a car could run on the manufactured spirit alone.

Process of Fermentation

Full details of the process generally used throughout Europe for the manufacture of this fuel are too scientific for treatment in a non-technical journal, he went on, but, reduced to its simplest terms, the process was one of fermentation. The spirit is produced either by direct fermentation of sugar-beet-juice, and potatoes or the whole juice may be replaced by the sugar-beet molasses which is the residue of the sugar refining process. Extraction of sugar from the beet-juice cannot be made 100 per cent. and in the molasses there is always a certain percentage of sugar-content which is sufficient for the fermentation.

While this fuel can be used in cars without the admixture of other fuels, Mr. Hubscher pointed out that for aero engines the standard fuel mixture in Europe was two parts of dehydrated spirit (99.99 volume per cent.), five parts petrol and three parts benzol (benzene).

"The process," he continued, "was still absolutely and definitely uneconomic, if prices of motor spirit and



"... IF GERMANY could be assured of 100 per cent. of Rumania's oil production, it would be sufficient to feed the war machine on the Western front or on the Eastern, but not on two fronts simultaneously." Above is a glimpse of storage tanks at Constanza, Rumania's main Black Sea port

petrol were compared, like that for the manufacture of artificial rubber, and if only for the reason that the soil area available for growing the raw material is insufficient, the fuel could not be made a complete substitute for Rumanian petrol."

Oil for One-front War

Speaking of the value of the Rumanian supplies to the Nazis, Mr. Hubscher said that if the wells there were functioning normally (discounting any drop in production due to destruction of wells before the German occupation, to earthquake damage or to subsequent sabotage), if in short, Germany could be assured of 100 per cent. of Rumania's production, it would be sufficient to feed the war machine on the Western front or on the Eastern, but not on two fronts simultaneously. The only other source of supply for Germany was from the Russian wells at Baku and Russia's peacetime needs were as great as her present production. Oil, of course, was the key to the situation in the Balkans and the Middle East and his own opinion was that Russia would not permit Germany to control the Dardanelles unless, as a *quid pro quo*, she herself could get control of the Irak oil-fields and the ocean outlet provided by the Persian Gulf.

Plant in New South Wales

Reverting to the potato-spirit industry, Mr. Hubscher said that while as a business proposition it was still uneconomic, the impact of war conditions might make it of some importance to countries such as Australia and New Zealand which were still dependent for liquid fuel on supplies from overseas. The extension of hostilities to the Pacific might seriously curtail oil supplies and even cut them off altogether for a time, forcing us back on our own resources. Australia had already begun experimenting.

The plant in which he had worked in Prague produced approximately 700,000 gallons a year. A much smaller installation of the same type was now working in New South Wales and the Australian authorities were investigating the possibilities of extending it. With the raw materials available, there were left two major difficulties to be overcome. Skilled labour was essential in all stages of the process, and men would have to be trained. Special machinery was also required.

The Prague factory had been fitted with French machinery and that source of supply was now, of course, closed to British countries. Plant might still, however, be obtained from Great Britain, and could certainly be secured from the United States.



Alan Blakey photograph
OTTO HUBSCHER
... 700,000 gallons a year

exchange, therefore, was one of the reasons for the growth of the motor-spirit industry. Idle labour and an abundance of low-grade potatoes and sugar-beet, for which there was no market, were the other factors.