XXVI. . GERMAN OIL PRODUCTION DATA.

Dr.Bütefisch of Leuna was Chairman of the Wirtschaftgruppe for fuel production and of A.R.S.Y.N., the organisation which co-ordinated the production programmes of the various German refineries. He was questioned regarding the overall German oil position and supplied the figures given in Table IX .

The capacity figures in brackets refer to plant in course of construction. Lubricating oil figures refer to production by direct refining of oil products and do not include synthetic lube oils such as those made by polymerisation of ethylene. Production of liquefied butane and propane is not shewn in the table but was normally 25-30,000 tons/month. Most of the Rumanian and Hungarian oil products were supplied direct to the armed forces in the Eastern areas and these supplies are not included in the table. The total Rumanian crude production was said to be roughly 6,000,000 tons/year.

Of the German crude oil production of 1,920,000 tons/year, some 8-900,000 tons/year came from the Austrian fields, 6-700,000 tons/year from the Hanover district, 200,000 tons/year from Heide and the remainder from Baden and the Polish frontier area. The German crudes, particularly those from Austria which contained only 5-7% petrol, were particularly good for lubricating oil production.

Examination of the table shews the overwhelming contribution of the hydrogenation plants to German aviation fuel production. It is also interesting to note the negligible extent to which Fischer-Tropsch activities were in process of extension.

Further data on German achieved and planned production of oil products were obtained in the form of graphs which were found in Dr.Butefisch's Leuna office. These data are reasonably in line with those supplied personally by Dr.Butefisch. Nine of the graphs are reproduced in this report as Figs. XL to XLVIII.

Dr.Butefisch and Dr.Ottens supplied the data in Table X on the latest specification for German oil products.

XXVII. USE OF BOTTLED PROPANE AND BUTANE FOR ROAD VEHICLES

According to Dr.Bütefisch, it was aimed to turn 60-65% of all German cars and commercial vehicles to bottled gas fuel. Shortage of steel and labour interfered with this plan and priority had to be given to conversion of trucks and vans. Actually only about 35% conversion was achieved. The monthly consumption of liquid gas was 25-30,000 tons. This compared with total consumption of petrol and diesel oil apart from that used by the armed services of 50,000 tons a month.

Pure butane was never used in Germany as bottled gas for road vehicles. Pure propane was used for household heating and lighting and it was also considered desirable to use propane in the winter months for road vehicles. In summer a mixture containing up to 85% butane was considered satisfactory. In actual practice, a blend of butane and propane in the proportions which corresponded to availability was employed during the war.

Dr. Scholtz of Leuna was the inventor of much of the equipment used in connection with liquid gas vehicles. He supplied the following information on I.G. development of liquid gas vaporisers.

In the first gasifier to be produced in commercial quantity, liquid gas was vaporised by means of a hot water preheater and the resultant vapour let down in two stages, firstly to a pressure of 0.4 ats and finally to -20 m.m. water pressure. The sub-atmospheric second-stage pressure ensured efficient closing of the second-stage let down valve when the engine was shut off, but it led to difficulty because of a variable air/fuel ratio at different throttle openings. Air leakages backwards into the second stage let down chamber were prevented by fitting a non-return valve (actually a gas mask valve was used) between this vessel and the jet chamber.

The second type of gasifier was similar to the first except that the second-stage let down pressure was atmospheric. In order to ensure that no leakage occurred when shutting off the engine, a stop valve was incorporated in the liquid feed line. This was connected so that as long as there was a positive engine oil pressure it remained open. This model was extremely satisfactory and Dr.Scholtz considered it to be the best gasifier which has been produced. It is, however, fairly expensive; a pre-war production cost of 200 marks was mentioned.

A cheaper type has been developed during the war costing only 25-30 marks to make. Some 100-150,000 of this type of gasifier have been manufactured by the German Solex Carburetter

firm. The preliminary vaporisation of the liquid gas is carried out in a coil heated by exhaust gases. The resulting vapour at a pressure of 1.2 ats is let down first to 0.4 ats and secondly to -5 m.m. water gauge. This assures satisfactory closing of the second stage let down valve and eliminates the rather expensive oil operated stop valve. At the same time it is sufficiently near atmospheric to avoid wide fuel air ratio variations with speed.

A third type was being developed in which vaporisation was brought about between the first and second let down stages.

Samples of these various types of gasifiers were procured at Leuna, together with detailed drawings. They were despatched to London through the usual channels but so far they have not materialised.

Dr. Scholtz said that a liquid gas had been used for running-in all aero engines during the war. A report giving a detailed description of the set up employed is amongst the documents removed from Leuna.

Some experimental work had been carried out at Leuna with a car running on neat methanol and also on a mixture of methyl ether and methanol.