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Ministry of Economic Warfare
(British)

COMMITTEE ON THE ENEMY OIL POSITION.

REPORT from SIR HAROLD HARTLEY'S SUB-COMMITTEE.

November, 1941.

This review of the German oil position takes the form of 5 Reports which are attached as Appendices II to V and the conclusions of which are consolidated in Appendix I. The reports referred to deal with the following subjects:

1. The German stock position at the outbreak of war. (Appendix II).

2. Civilian and industrial consumption in German Europe since the outbreak of war. (Appendix III).

3. Consumption by the enemy armed forces since the outbreak of war. (Appendix IV).

4. A statement which has been prepared by a technical committee under the Chairmanship of Colonel Auld, showing the estimated production in Germany and occupied territories. (Appendix V).
   Included in these figures is an estimate of stocks obtained in Italy and occupied countries.

It can be seen from Appendix I that during the period 1st September 1939 to 1st July 1941 consumption in Axis Europe was almost exactly equivalent to intake i.e. production, imports, contraband leakage and stocks acquired in all occupied countries including Italy, France and Roumania. Thus on 1st July 1941 stocks in Axis Europe were the same as those in Greater Germany alone on 1st September 1939, i.e. between 5 and 5½ million tons.

During the four months from July to October it is estimated that enemy consumption has exceeded production by about 1,500,000 tons, involving a withdrawal from stocks at the rate of about 400,000 tons a month. Thus, on November 1st it is estimated that German controlled stocks were reduced to between 3½ and 4 million tons.

The whole of this oil cannot be considered available for consumption. A detailed study has been made of the quantity of oil in German occupied Europe which

must always be immobilised in process and in transit (see Appendix VI). The amount of oil in transit will vary with the length of the enemy lines of communication, and the demand occasioned by the nature of his activities. The present estimate of oil in process is 550,000 tons, and oil in transit 850,000 tons, giving a total of 1,400,000 tons. The stocks available to Germany on November 1st were therefore between 2,100,000 and 2,600,000 tons.

In previous reports the volume of stocks estimated to be "immobilised" was given as 2,800,000 tons. This was made up of about 1,400,000 tons in process and transit and 1,400,000 tons estimated as necessary to maintain efficient local distribution. It is thought that a more accurate picture of the German oil position will be given if only the 1.4 million tons actually in process and transit is deducted when arriving at a figure of "available stocks". It must then be remembered that long before the "available" stocks are exhausted industrial effectiveness will be impaired by local oil famines resulting from difficulties in distribution.

We have taken no account of civil consumption of oil in German occupied Russia. The peace time consumption of that part of Russia now occupied by the Germans was about half a million tons a month. It would seem that if Germany is to gain any economic advantage from her conquest she must spend oil to do it, and the pre-war Russian consumption was in the main strictly utilitarian. Intelligence about German economic action and intentions in occupied Russia is still scanty and uncertain, and it is not felt that any numerical estimate of what oil she may have to spend would be helpful. It remains a debit item of which no account has been taken.

Germany's future oil position will depend upon the following factors:

(1) The degree of contraction in military consumption between the 1st November and the opening of the spring campaign.

The naval and air force estimates are expected to remain the same. The army estimate covers two possibilities, and is as follows:-

(a) It is assumed that the whole eastern front is static during the winter. The saving in consumption will then be 300,000 tons per month, provided that the troops withdrawn are not actively employed elsewhere.

(b) It is assumed that the northern two-thirds of the eastern front will be static, and the southern front will remain active throughout the winter. The saving in consumption will then be 200,000 tons per month provided that the troops withdrawn from the northern two-thirds of the front are not actively employed elsewhere.

(2) Forced contraction in civil and industrial consumption.

The new estimate of current consumption assumes that full industrial output for war purposes is maintained in Germany, and that the allowance to occupied countries could not be reduced without a reduction in the contribution which these countries are making to the German war effort. As the requirements of the armed forces must undoubtedly have priority over all other requirements, one cannot rule out of account the possibility that Germany will deliberately curtail supplies, and thus reduce the efficiency of her essential war industries in order to ensure that her armies have sufficient supplies for a spring campaign.

Until early in 1941 the Germans did not seriously undertake the development of the use of producer gas as an alternative fuel. It is estimated that the number of generators on motor vehicles alone increased during 1941 from 20,000 to 120,000, producing a saving of 260,000 tons of oil a year and a further expansion of this programme is known to be in hand.

Substantial economics in oil consumption may be expected from this source.

(3) Expanding production of crude oil, and synthetic and substitute fuels.

Destruction in the oilfields of Russian Poland is believed to have been slight. A small production can be expected in 1941 and in 1942 some 400,000 tons crude oil will be added to Germany's supplies from this source.

There has been a steady expansion of synthetic production in Germany since 1937. The increase to be expected in 1942 over 1941 production is about 330,000 tons.

During 1942 Germany could if pressed obtain substantial relief by the use of Methyl and Ethyl alcohol. The former entails the use of additional surplus synthetic ammonia capacity and supplies from this source could be increased from the rate of 600,000 tons of motor spirit equivalent which has been allowed for the last 6 months of 1941 to 1,000,000 tons during 1942.

In 1941 the quantity of Ethyl alcohol which was available in occupied Europe as automotive fuel amounted to 642, 000 tons. It is estimated that in 1942 this could be increased to at least 1,848,000 tons if -

(a) 80% of the available sugar-beet molasses, instead of 50% as at present were used for alcohol.

(b) the edible sugar allocation for Germany, Italy, Poland and Czechoslovakia were reduced by 25% of the present rate of consumption

(b) Contd.

which is still the same as pre-war. This would reduce the sugar rations of these countries to approximately the existing rate in France and Belgium.

(c) 30% of the 1941 vintage and of all stocks of wine were distilled in all countries except Germany, and 20% of the current production and stocks of Potable Spirits were also distilled.

No intelligence is available of the quantities of Ethyl and Methyl alcohol at present being used, and although it is known that wine and sugar are being withdrawn from human consumption, and are probably intended for alcohol distillation, there is no evidence of Germany's intention to increase her supplies from these sources by as much as the 135,000 tons a month forecast for 1942. This figure should therefore be taken only as an indication of maximum potential supply.

The maximum possible increase from all these sources seems to be about 200,000 tons a month for the full year.

(4) <u>Acquisition of Russian oil fields by the Germans</u>.

If Germany can obtain control of the North and Trans-caucasian oilfields with the wells, refineries and transport facilities in reasonable working order her oil problem is solved. This, however, depends on the effectiveness of defence and destruction. Germany's first and easiest objectives are the Maikop and Grozny fields which have a present annual production of about 5,000,000 tons. If destruction, including cementing up of wells, is effective, Germany is unlikely to obtain more than 600,000 tons of oil during the first 6 months of occupation. The complete destruction of the refineries in the Maikop and Grozny areas would prevent her from making immediate use of this oil as it would have to be transported to Europe for refining.

(5) Extent and effectiveness of Allied Interference.

SOURCES OF INFORMATION.

In preparing this report the following methods have been used:-

1. Wherever possible, use has been made of Intelligence reports from one of the following categories:-

   a) Definite statistics e.g. consumption in Norway and Denmark, movements of oil from Roumania, actual consumption in occupied and unoccupied France in May 1941. This information is derived from neutrals who have recently been in the countries concerned, escaped nationals, secret service reports, and intercepts.

   b) Published decrees regarding restrictions in Axis Europe, and any other published information such as the Von Schell speech at the Leipzig Fair, which gave figures of conversions of petrol and diesel engines to producer gas.

   c) Reports received from secret sources, giving no precise figures but indicating general trends.

2. Considerable use has been made of statistical data relating to pre-war Germany, and the inferences which have been drawn from this source have been fully discussed with the oil companies and other experts in the light of their pre-war experience of German conditions. Examples of this procedure may be found in the Appendix on German oil stocks at the beginning of the war (Appendix II) and in that part of the Appendix on intake into German Europe since the outbreak of war (Appendix V) which deals with the production of crude oil and synthetic and substitute fuels.

3. In cases where Intelligence is not available and pre-war statistics give little guide to the present Axis position, use has been made of comparable figures in this country, e.g. in the report on civil consumption in Germany (Appendix III).

4. In the case of service estimates, the figures are based on intelligence regarding the enemy's activity, and where necessary on the known rates of consumption by the British Armed Forces under comparable conditions.

EVIDENCE OF OIL SHORTAGE FROM INTELLIGENCE REPORTS.

Any estimate of this kind that is not based wholly on ascertained figures must be liable to a considerable margin of error, and it is therefore important to know to what extent its results are confirmed by Intelligence reports. Evidence from such sources showed that in the earlier periods of the war motor transport both in Germany and in occupied countries was being restricted to essential uses and that substitute fuels were being used to an increasing extent.

During recent months, however, there have been numerous reports showing that greater efforts are now being made to limit the civil use of motor transport as much as possible and to increase the general use of substitute fuels. There have also been a number of reports that Germany has drawn heavily on her oil reserves during the Russian campaign and there is some evidence of actual oil shortages particularly in occupied countries. There is therefore a growing amount of information in support of the general findings of the report. Relevant extracts from Intelligence reports are given in Appendix VII.

APPENDIX I.

ANALYSIS OF ENEMY OIL POSITION FROM THE OUTBREAK OF WAR AND ESTIMATE OF AVAILABLE STOCKS ON NOVEMBER 1st, 1941

(Full account has been taken of the development of both supplies) (and consumption as the area under Axis control has increased.)

	000 tons
TOTAL STOCKS SEPTEMBER 1, 1939 in Greater Germany.	5,000 to 5,500

SUPPLIES SEPTEMBER 1, 1939 to JUNE 30, 1941 (22 months)

	000 tons
Production	18224
Captured Stocks	6760
Total	24984

CONSUMPTION SEPTEMBER 1, 1939 to JUNE 30, 1941 (22 months)

	000 tons
Civil	15732
Navy	1742
Army	3202
Air Force	3939
Todt & Aerodromes	480
Total	25095

Supplies and consumption from Sept. 1, 1939 to June 30, 1941 are assumed to balance.

TOTAL STOCKS JULY 1, 1941 in Axis Europe.	5,000 to 5,500

SUPPLIES JULY 1, 1941 to NOVEMBER 1, 1941 (4 months)

Production	4579

CONSUMPTION JULY 1, 1941 to NOVEMBER 1, 1941 (4 months)

Civil	2840
Navy	412
Army	1813
Air Force	922
Todt & Aerodromes	160
Total	6147

CONTD

Net withdrawal from stocks July 1, 1941 to November 1, 1941 (4 months)		1568
TOTAL STOCKS	1st November, 1941	3450 - 3950
TRANSIT AND PROCESS STOCKS	1st November, 1941	1400
AVAILABLE STOCKS	1st November, 1941	2050 - 2550

No attempt has been made to assess either the quantity of oil captured by the enemy in the course of military operations, or the quantity of enemy oil which may have been destroyed at sea or on land by allied action. Both figures are no doubt substantial after two years of war, but the very large margin of error which must be present in any estimates would largely destroy their value.

APPENDIX II.

11th November, 1941

GERMAN OIL STOCKS.

AT THE OUTBREAK OF WAR.

In view of a recent report by the Soviet Government that stocks of oil in Greater Germany (including Poland & Czechoslovakia) at the beginning of 1940 amounted to 6,000,000 tons, we have re-examined the supply and demand position during the five years prior to the outbreak of war.

We have assumed that the German Government did not start to accumulate stocks until the beginning of 1935, when the first indications were given to the local companies of the Government intention of laying down strategic reserves.

The Standard Oil Co., of New Jersey estimate that stocks on 1st January 1936 amounted to 1,180,000 tons. This figure excludes oil in transit and bunkers, which are estimated at 120,000 and 150,000 tons respectively. Thus total stocks at that date amounted to 1,450,000 tons.

In view of the incompleteness of official trade returns, it was felt that the only satisfactory way of arriving at true import figures was to trace all tanker and packed product cargoes discharged at German, Dutch and Belgian ports, (a large proportion of German imports entered the country via Rotterdam and Antwerp). If to these were added the indigenous production of Germany, Belgium and Holland and from the resulting figure was deducted:-

a) Consumption in the three countries.

b) Exports from the three countries to destinations other than each other.

c) Additions to stocks in Belgium and Holland.

Any balance left over would represent either additions to German stocks or unaccounted for consumption.

The attached Appendix gives details of an analysis worked out on these lines, which may briefly be summarised as follows:-

Stocks 1.1.35		1,450,000 tons
Unexplained balance	1935	280,000 "
" "	1936	431,000 "
" "	1937	452,000 "
" "	1938 *	877,000 "
" "	1.1.39/30.6.39	368,000 "
" "	1.7.39/30.9.39 say	142,000 "
		4,000,000 "

* Includes stocks taken over on occupation of Austria and Czechoslovakia.

Owing to the manner in which German consumption figures were prepared deliveries to customers for stock purposes may have been returned as deliveries into consumption. On the other hand, part of the unexplained balances may have been used to meet pre-war demand of the German armed forces.

An attempt to decide which of these alternatives is correct has revealed the following results:-

1) German Navy - The examination of bunker sales during the years 1935 - 38 shows:-

	Deliveries reported taken from German "Consumption" figures:	Deliveries to shipping lines by three major companies:	Probable deliveries to Shipping lines by other companies:	Probable deliveries to own tankers:	Balance representing probable deliveries to German Navy:
1935	755,000	465,000	62,000	70,000	158,000
1936	990,000	520,000	70,000	84,000	316,000
1937	1,130,000	645,000	87,000	90,000	308,000
1938	1,413,000	590,000	80,000	100,000	643,000
				Total	1,425,000

If the same average unexplained balance is assumed to have been delivered to the Navy during the first 8 months of 1939, total deliveries are estimated at 1,661,000 tons. The Admiralty estimates German naval consumption during this period at 272,000 tons. Therefore some 1,400,000 tons were put into stock by the German navy out of current consumption figures.

Army.

The war office estimate for consumption by the German Army during the period under review is 1,275,000 tons. This represents about 11% of total motor spirit sales. The oil companies made deliveries to the German Army which were included in their current sales and were thus used in estimating current consumption. Though it is impossible to draw any definite conclusion, it is not thought that the German Army accumulated any appreciable quantity of oil out of current purchases or that any large quantity of the unexplained annual balances were used to meet military demands.

Air Force.

Sales of aviation spirit in Germany by the Shell, Standard Oil of New Jersey and Anglo-Iranian Oil Co. to customers other than Civil airlines during

the four years 1935/38 were:-

1935	63,000 tons
1936	129,000 "
1937	199,000 "
1938	273,000 "

Assuming that 250,000 tons were delivered during the first 8 months of 1939, total deliveries during the period in question amounted to 914,000 tons. Although some of these deliveries were undoubtedly to flying clubs, it can be assumed that the bulk of the sales were for account of the German Air Force.

A preliminary estimate by the Air Ministry puts consumption during this period at 1,400,000 tons. There is thus adeficiency of 500,000 tons which was met either from sales by other companies or from Government stock. It is thought that sales by other companies would have consisted chiefly of benzol and during the latter half of the period under review of certain quantities of synthetic aviation spirit and may have amounted to 250,000 tons. Thus 250,000 tons would have been withdrawn from Government Stocks.

Conclusion.

Based on the above calcuations total stocks in Germany at the outbreak of war were:-

Stocks 1st January 1935	1,450,000 tons
Unexplained balances 1st January 1935 to 3rd September 1939	2,550,000 "
Accumulation of stocks by German Navy out of current purchase	1,400,000 "
	5,400,000 "
Less withdrawals on account of German Air Force	250,000 "
	5,150,000

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IX

SUPPLY AND

GERMANY, BELGIUM, HO
SLOVAKIA, 1935 TO

(Expressed in tho

			1935		1936	
Supply. Production.						
Crude	Germany		430		445	
Tar Oil	Germany		250		300	
Synthetic	Germany		770		975	
Synthetic	Belgium		26		29	
Synthetic	Holland		8		21	1,770
Crude	Austria		-		-	
Synthetic	Austria		-		-	
Crude	Czechoslovakia		-		-	
Synthetic	Czechoslovakia		-	1,484	-	1,770
Imports						
Germany	(Individual Shipments)		2,989		3,651	
	(Ex Estonia)		10		10	
	(Ex Poland)		47		56	
Belgium	(Individual Shipments)		1,142		1,351	
Holland	(Individual Shipments)		2,344		2,775	
Austria			-		-	
Czechoslovakia				- 6,532		- 7,843
	TOTAL SUPPLY.			8,016		9,613
Demand. Consumption plus Refinery use and loss						
Germany			4,736		5,803	
Austria			-		-	
Czechoslovakia			-		-	
Belgium			955		840	
Holland			1,232		1,403	
Exports						
Germany			261		293	
Belgium			52		291	
Holland			19		15	
Exports to Switzerland and France not included in official reports.			381		337	
	TOTAL DEMAND			7,636		8,982
Surplus of Supply over Demand				380		631
Less increase in stocks Holland/Belgium during the year		say		100		200
Add stocks Austria and Czechoslovakia 1.1.38				-		-
Unexplained balance, i.e. German Government consumption and/or variation in stock during period				280		431

(a) Assuming stocks unch
(b) Estimated
(c) 50% 1938
(d) 10% increase on 1936
(e) For July and Aug at
months' figures, the

APPEND

IX II

SMAND.

AND, AUSTRIA AND CZECHO-
AVAKIA 1939.

ands of Tons)

		1937		1938		1939 Jan/June	1939 July & Aug.	Total of Unexplained Balances
445		454		552		317		
300		320		335		170		
975		1,460		1,747		1,200		
29		37		31		17		
21	1,770	11		6		5		
-		-		57		47		
-		-		11		5(c)		
-	1,770	-		19		10(b)		
		-	2,282	53	2,811	25(c)	1,796	
,651								
10		3,534		4,362		(2,220		
56		45		54		(		
351		45		28		(		
775		1,471		1,336		621		
-		3,328		3,680		1,932		
-	7,843	-		387(a)		160(a)		
			- 8,423	366(a)		180(a)	3,113	
	9,613				10,213			
			10,705		13,024		6,909	
803								
-		6,918		8,000		(4,800(d)		
-		-		457		(		
840		-		438		(		
403		911		861		441		
		1,610		1,771		900		
293								
291		209		287		(		
15		127		100		(400(c)		
		36		66		(		
337								
	8,982	349		387		-		
			10,160		12,367		6,541	
	631							
			545		657		368	
	200							
	-		93		176		-	
			-		396		-	
	411		492		877		368	142(c) 2,550

g stocks unchanged.
d
3

rease on 1936 rate.
y and Aug. at 1939 no figures are available. Based on the previous six
figures, the accumulation is estimated at 142,000 tons.

APPENDIX III.

CIVIL AND INDUSTRIAL CONSUMPTION.

We estimate that the present consumption of all oil products, including wax and asphalt, in Greater Germany is at the rate of 4,250,000 tons a year. This is a slight increase on previous estimates, but whereas the latter have assumed a constant figure of consumption since the outbreak of war, the new estimate represents the lowest point of a gradual decline in consumption brought about by steady policy of economy and conversion to other forms of power. In other words, civil and industrial consumption during the early stages of the war appear to have been higher than was assumed and this necessitates an adjustment in the stock position.

It has been assumed that in Czechoslovakia and German-occupied Poland, the ratio of present consumption to pre-war consumption is the same as the ratio in Germany itself, owing to the extensive industrial use which is being made of these territories.

In these three countries it has been assumed that immediately on the outbreak of war, previously prepared plans were put into operation and resulted in the elimination of all luxury consumption at once. From then on, it has been assumed that consumption has declined steadily from this figure to the present rates.

We see no reason to alter the previous estimate of 1,000,000 tons a year as the rate of Italian civil and industrial consumption, during the latter half of 1941.

The official Roumanian consumption figures are available from November 1940, when occupation is assumed to have taken place, until the end of June 1941 and there is a considerable volume of intelligence to support the figure which has been assumed from July onwards.

Consumption in each of the other occupied countries has been considered separately. Intelligence is available as a guide to the present consumption in Denmark, Norway, France, Bulgaria and Finland. There is no indication at all from Intelligence of the actual consumption in Belgium, Holland, Yugoslavia, Greece and Hungary, and in each of these countries, we have assumed the consumption at 15% of the pre-war rate, the pre-war bunker consumption having first been deducted.

In each country consumption is assumed to have fallen from the pre-occupation rate (less bunkers) to the present rate by the following stages:-

1. Countries occupied in 1940.

50% of the reduction achieved at the end of the first month after occupation, and the remaining 50% spread evenly over the following 5 months.

2. Countries occupied in 1941.

50% of the reduction achieved at the end of the first month after occupation, and the remaining 50% spread over the following 2 months.

The increased rate of decline has been assumed in 1941 on account of Germany's greater need for conserving her fuel resources.

APPENDIX III.

DETAILS

OF THE ESTIMATE OF CIVIL CONSUMPTION OF OIL IN GERMANY AND AUSTRIA.

	'000 tons
* Lorries	1,460
Motor Cars and Motor Cycles	600
Omnibuses	200
Tractors	200
Industrial Black Oils	430
* Bunkers for inland Navigation	384
Bunkers for ships in Northern Waters	133
Gasoline consumption in Aero engine Factories	50
Kerosene (burning oil)	90
Lubricating oil	581
Asphalt	396
Wax	100
	4,524

* In both these figures a reduction has been made to allow for the probable conversion of lorries and barges to producer gas. The estimated annual saving is 276,000 tons per annum.

The Committee considered the above figures and while there was no wish to interfere with any individual item, it was felt that some slight reduction in the total should be made. It was decided to put forth an estimate of 4,250

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Table Showing Estimated
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Country	1939 Aug.	Sept.	Oct.	Nov.	Dec.	1940 Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept
Greater Germany	562	493	487	481	475	469	463	457	451	445	439	433	427	421
Czechoslovakia	34	27	27	26	26	25	25	24	24	23	23	22	22	22
German Poland & Danzig			27	22	21	21	20	20	20	19	19	19	18	18
Norway										33	24	22	20	18
Denmark										59	33	28	23	18
Belgium											58	33	28	23
Holland											106	61	52	43
France												339	201	174
Italy & Albania +												167	158	150
Roumania														
Bulgaria														
Yugoslavia														
Greece														
Finland														
Hungary														
TOTAL MONTHLY CONSUMPTION	592	520	541	589	522	515	508	501	495	579	702	1124	949	887
CUMULATIVE TOTAL			1061	1590	2112	2627	3135	3636	4131	4710	5412	6536	7485	8372

*Including bunkers in Northern Waters at current
+ " " " Mediterranean " "

lopment of Civil Oil Consumption in Axis Europe.

howing Estimated Monthly Consumption Country by Country
Since Outbreak of War.

All Products.

Thousands of Tons per Month.

1940						1941									
July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
433	427	421	415	409	403	397	392	387	382	377	372	367	362	357	352
22	22	22	21	21	21	20	20	20	19	19	19	18	18	18	17
19	18	18	18	17	17	17	16	16	16	15	15	15	14	14	14
22	20	18	16	14	14	14	14	14	14	14	14	14	14	14	14
28	23	18	13	8	8	8	8	8	8	8	8	8	8	8	8
33	28	23	18	14	9	9	9	9	9	9	9	9	9	9	9
61	52	43	34	25	16	16	16	16	16	16	16	16	16	16	16
339	201	174	146	119	91	63	63	63	63	63	62	61	60	59	58
167	158	150	142	133	125	120	115	109	104	94	83	83	83	83	83
				135	149	164	146	150	173	142	114	100	100	100	100
							7	6	6	5	5	5	5	5	5
								14	8	5	2	2	2	2	2
									29	17	11	4	4	4	4
											7	5	4	3	3
											22	13	8	3	3
1124	949	887	823	895	853	828	799	799	824	800	739	738	713	701	688
6536	7485	8372	9195	10090	10943	11771	12570	13369	14193	14993	15732	16470	17183	17884	18572

ters at current estimated level from Sept. 1939 inclusive.
an " " " " " July 1940 inclusive.

11.11.41.

APPENDIX IV.

CONSUMPTION BY THE ENEMY ARMED FORCES SINCE THE OUTBREAK OF WAR.

The course of oil consumption by the enemy armed forces since the outbreak of war, as estimated by the three services Departments, is set out in the statement attached. The statement also includes an estimate for oil consumption by the Todt organisation and the aerodrome building and repair section of the German Air Force.

MILITARY CONSUMPTION.

No change has been made in the rates of consumption adopted in our last report, and the increase in the estimated consumption for October is caused by an increase in the number of divisions on the Eastern front and by the very high degree of activity throughout the month.

It is thought that in the pauses which separated the successive German offensives, the railways were regauged and repaired close up to the front line. The capacity of the railways behind the German front has been examined and as they appear to be able to carry the supplies and replacements required, there should be no need for throughout road transport of supplies.

NAVAL CONSUMPTION.

No change is made in the rate of naval consumption set out in our last report.

AIR FORCE CONSUMPTION.

A very careful detailed and complete examination of oil consumption by the German and Italian Air Forces since the outbreak of war, has been carried out by the Air Ministry since our last report, and it has included

the investigation of ground transport consumption which we recommended.

The new estimates of German consumption are considerably higher than the old and the main details of new and old are given below:

	OLD ESTIMATE	NEW ESTIMATE.	
	Monthly consumption August 1941 tons.	Average monthly consumption 1/9/39-30/6/41 tons	Average monthly consumption 1/7/41-31/10/41 tons.
Aviation spirit	115,000	108,000	151,000
Ground transport	25,000	64,000	66,000
Total	140,000	172,000	217,000

The increase in the estimate of aviation spirit consumption since the outbreak of the Russian war is due to -

1) An increase in the estimate of non operational activity of operational units.

2) An increase in the estimate of training activity.

3) An additional allowance for the ferrying of training aircraft.

It was explained in our last report that at that time the Air Force Estimates had taken no account of the consumption of oil by Air Force Ground Transport. A token figure of 25,000 tons a month was included at the time. The detailed examination of the problem which has since been carried out has raised the figure to about 65,000 tons a month.

TODT ORGANISATION AND AERODROME CONSTRUCTION.

The only certain information available about the Todt Organisation as a whole is that it is employing at the moment not less than the numbers of men shown below:-

Norway and Western Europe	100,000
Balkans	50,000
Eastern Front	300,000

With this information as a basis and the general knowledge of the sort of work this organisation was built to carry out, widespread enquiries have been made among those people with the best qualifications to understand both the type of work and the special conditions under which Todt is having to work today.

As a result of these enquiries it appears that the Todt Organisation may be expected to consume oil at the rate of 28,000 tons a month in good contracting weather, and the rate may drop to 7,000 a month in bad winter weather.

The Todt Organisation does not build aerodromes. This work is done by the German Air Force's own Aerodromes Construction Corps. This Corps is known to consist of about 250,000 men and their job is laying and repairing concrete and tarmac runways.

The oil consumption of this body of men if employed on this work for a full year would be about 400,000 tons. Bad weather will affect this force to some extent, but not to the same extent as it affects Todt. It seems likely that when the weather becomes impossible as many of this force as can be moved will be sent to work where it is more favourable. The force is

trained for specialised aerodroms building and will be used on that work as much as possible.

The consumption of these two forces is most difficult to estimate with any confidence. We propose to assume a consumption of 40,000 tons a month or 480,000 tons a year for both.

CONSUMPTION BY THE ENEMY ARMED

	Sep. 1939	Oct. 1939	Nov. 1939	Dec. 1939	Jan. 1940	Feb. 1940	Mar. 1940	Apr. 1940	May 1940	June 1940	July 1940	Aug. 1940	Sep. 1940	O 19
ARMY														
GERMAN	135	100	100	100	100	100	100	138	239	184	121	121	121	
ITALIAN										12	18	18	18	
RUMANIAN & HUNGARIAN														
TOTAL	135	100	100	100	100	100	100	138	239	196	139	139	139	
NAVY														
GERMAN	50	50	50	50	50	50	50	50	50	50	60	60	60	
ITALIAN										27	40	40	40	
TOTAL	50	50	50	50	50	50	50	50	50	77	100	100	100	
AIR FORCE														
GERMAN	159	160	155	160	160	150	160	158	176	170	163	168	164	
ITALIAN										10	14	14	14	
TOTAL	159	160	155	160	160	150	160	158	176	180	177	182	178	
TODT ORGANISATION and AERODROME CONSTRUCTION											40	40	40	
TOTAL	344	310	305	310	310	300	310	346	465	453	456	461	457	
SERVICE CONSUMPTION														

x This estimate is subject

APPENDIX IV

ENEMY ARMED FORCES SINCE THE OUTBREAK OF WAR.

ug. 940	Sep. 1940	Oct. 1940	Nov. 1940	Dec. 1940	Jan. 1941	Feb. 1941	Mar. 1941	Apr. 1941	May 1941	June 1941	July 1941	Aug. 1941	Sep. 1941	Oct. 1941
														*
121	121	121	121	121	121	121	141	183	182	218	394	394	386	480
18	18	18	18	18	17	17	17	17	17	17	21	21	21	21
												25	25	25
139	139	139	139	139	138	138	158	200	199	227	415	440	432	526
60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
40	40	40	41	42	42	42	42	42	42	42	43	43	43	43
100	100	100	101	102	102	102	102	102	102	102	103	103	103	103
168	164	170	186	186	186	168	186	195	206	198	219	219	212	219
14	14	14	14	15	10	9	11	10	16	10	11	14	14	14
182	178	184	200	201	196	177	197	205	216	208	230	233	226	233
40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
461	457	463	480	482	476	457	497	547	557	577	788	816	801	902

e is subject to final adjustment.

SUMMARY OF SUPPLIES - AXIS EUROPE - 1.9.39 - 31.12.42 APPENDIX V. 14.11.41

	1.9.39/ 31.12.39	1940	1st half 1941	TOTAL 1.9.39/ 30.6.41	2nd half 1941	1942	TOTAL 1.7.41 - 30.12.42
GREATER GERMANY							
From Crude Production	340	1,190	680	2,210	740	1,602	2,342
Synthetic	915	3,400	2,050	6,365	2,050	4,450	6,500
Substitutes	331	1,533	814	2,678	919	2,586	3,505
Miscellaneous	504	1,974	370	2,848	50	40	90
Sub. Total	2,090	8,097	3,914	14,101	3,759	8,678	12,437
OTHER AXIS AREAS							
From Crude Production		855	2,599	3,454	2,963	6,456	9,419
Synthetics		57	57	114	57	114	171
Substitutes		223	.322	545	328	1,576	1,904
Miscellaneous		144	- 134	10	-80	-146	-226
Sub. Total		1,279	2,844	4,123	3,268	8,000	11,268
LOOT & STOCKS ACQUIRED:							
Norway, April 1940		200		200			
Denmark, " 1940		100		100			
Belgium, May 1940		150		150			
Holland, May 1940		400		400			
France, June 1940		1,200		1,200			
Italy, June 1940		3,000		3,000			
Roumanian, Nov.1940		1,500		1,500			
Hungary 1941			75	75			
Greece 1941			25	25			
Bulgaria 1941			10	10			
Jugoslavia 1941			100	100			
Sub. Total		6,550	210	6,760	-	-	-
GRAND TOTAL	2,090	15,926	6,968	24,984	7,027	16,678	23,705

14th November, 1941.

SUPPLIES - PETROLEUM & LIQUID OR GASEOUS SUBSTITUTES: GERMAN CONTROLLED EUROPE.
1.9.39 - 31-12-39

1,000 M. Tons.

SOURCES	CRUDE OR RAW MATERIAL	FINISHED PRODUCTS	REMARKS
GREATER GERMANY			
Crude Production			
Hanover	150		Steady production of 450,000 tons/annum.
Reitbrook	100		July production 25,000 tons.
Vienna Basin	90		Rate of 300,000 attained by end 1939.
Czechoslovakia	7		Steady production 20,000 tons/annum.
German Poland	30		Early 1939 production rate 13,000 tons/month but allowance made for Polish war difficulties.
Sub. Total	377	340	Assuming 10% loss & Ref. fuel
Synthetic, etc.			
Hydrogenation		430	
Fischer Tropsch		210	
H. T. Tar) L. T. Tar)		275	H.T.15% recovery on 2,000,000 tons/annum. Balance other products not used as petroleum substitutes. L.T. 70% recovery on 750,000 per annum: Balance of L.T.Tar hydrogenated.
Sub. Total		915	
Substitutes			
Methanol(Methyl Alcohol)		-	
Ethanol (Ethyl Alcohol)		67	
Benzol		183	Rate of 548,000 per annum.
Bottle Gas		81	Propane & Butane from hydrogenation and Fischer Tropsch.
Vegetable Lubs.		-	
Sub. Total		331	

14th November, 1941.

SUPPLIES - PETROLEUM & LIQUID OR GASEOUS SUBSTITUTES; GERMAN CONTROLLED EUROPE.(CONTD)
1.9/39 - 31.12.39

1,000 M. Tons.

SOURCES	CRUDE OR RAW MAT-ERIAL	FINISH-ED PRO-DUCTS	REMARKS
Sub.Total Fwd'd		331	
Miscellaneous			
Regeneration of lubs.		25	
Russian Imports		5	
Rumanian Imports		324	
Blockade Running		150	
Sub. Total		504	
TOTAL GREATER GERMANY		2,090	

SUPPLIES - PETROLEUM & LIQUID OR GASEOUS SUBSTITUTES: GERMAN CONTROLLED EUROPE - 1940

1,000 M. Tons

SOURCES	CRUDE OR RAW MATERIAL	FINISHED PRODUCTS	REMARKS
GREATER GERMANY			
Crude Production			
Hanover	450		Target Priority Report.
Reitbrook	353		" " "
Vienna Basin	300		Assuming 150,000 from Gaisalberg, 50,000 from Zisterdorf, 100,000 from Gosting.
Czechoslovakia	20		
German Poland	200		
Sub. Total	1,323	1,190	Assuming 10% loss & Ref. fuel.
Synthetic, etc.			
Hydrogenation		1,675	
Fischer Tropsch		900	
H.T. Tar)			
L.T. Tar)		825	
Sub. Total		3,400	
Substitutes			
Methanol (Methyl Alcohol)		400	On basis of previous Lloyd Report (Petrol equivalent of 800,000 tons Methanol)
Ethanol (Ethyl Alcohol)		205	
Benzol		548	
Bottle Gas		330	
Vegetable Lubs.		50	
Sub. Total		1,533	
Miscellaneous			
Regeneration of lubs.		100	
Russian Imports		700	
Roumanian Imports		1,124	
Blockade Running		50	
Sub. Total		1,974	
TOTAL GREATER GERMANY		8,097	

SUPPLIES - PETROLEUM & LIQUID OR GASEOUS SUBSTITUTES: GERMAN CONTROLLED EUROPE
1.1.41 - 30.6.41.

1,000 M. Tons

SOURCES	CRUDE OR RAW MATERIAL	FINISHED PRODUCTS	REMARKS
GREATER GERMANY			
Crude Production			
Hanover	225		Target Priority Report
Reitbrook	160		" " "
Vienna Basin	235		Assuming rate of 270,000 from Gaiselberg
Czechoslovakia	10		
German Poland	125		Assuming rate of 250,000 tons achieved.
Sub. Total	755	680	Assuming 10% loss & Ref. fuel
Synthetic (etc.)			
Hydrogenation		1,135	
Fischer Tropsch		500	
H.T. Tar)		415	
L.T. Tar)			
Sub. Total		2,050	
Substitutes			
Methanol (Methyl Alcohol)		200	
Ethanol (Ethyl Alcohol)		100	
Benzol		274	Assuming rate for whole year 548,000.
Bottle Gas		215	
Vegetable lubs.		25	
Sub. Total		814	
Miscellaneous			
Regeneration of lubs.		50	
Russian Imports		320	
Roumanian Imports		-	From 1.1.41 see Roumanian production.
Blockade running		-	Leakage assumed offset by sinkings.
Sub. Total		370	
TOTAL GREATER GERMANY		3,914	

SUPPLIES: PETROLEUM & LIQUID OR GASEOUS SUBSTITUTES: GERMAN CONTROLLED EUROPE
1.7.41 - 31.12.41

1,000 M. Tons

SOURCES	CRUDE OR RAW MATERIAL	FINISHED PRODUCTS	REMARKS
GREATER GERMANY			
Crude Production			
Hanover	225		
Reitbrook	160		
Vienna Basin	302		Assuming annual rate of 605,000 achieved.
Czechoslovakia	10		
German Poland	125		
Sub. Total	822	740	Assuming 10% loss and Refinery fuel.
Synthetic, etc.			
Hydrogenation		1,135	
Fischer Tropsch		500	
H.T. Tar)			
)			
L.T. Tar)		415	
Sub. Total		2,050	
Substitutes.			
Methanol (Methyl Alcohol)		300	
Ethanol (Ethyl Alcohol)		105	
Benzol		274	
Bottle Gas		215	
Vegetable Lubs.		25	
Sub. Total		919	
Miscellaneous			
Regeneration of lubs.		50	
Russian Imports		-	
Roumanian Imports		-	
Blockade Running		-	
Sub. Total		50	
TOTAL GREATER GERMANY		3,759	

SUPPLIES: PETROLEUM & LIQUID OR GASEOUS SUBSTITUTES: GERMAN CONTROLLED EUROPE-1942.

1,000 Tons Metric

SOURCES	CRUDE OR RAW MATERIAL	FINISHED PRODUCTS.	REMARKS.
GREATER GERMANY			
Crude Position			
Hanover	450		Steady production.
Reitbrook	320		Field assumed to be falling off from previous peak production.
Vienna Basin	740		Maximum potential production.
Czechoslovakia	20		
German Poland	250		
Sub. Total	1,780	1,602	Assuming 10% loss & Refinery fuel.
Synthetic, etc.			
Hydrogenation		2,600	
Fischer Tropsch		1,000	
H.T. Tar)			
)		850	Increase of 5% in output of H.T. Tars as compared with previous years.
L.T. Tar)			
Sub. Total		4,450	
Substitutes.			
Methanol (Methyl Alcohol)		1,000	Increased from rate of 600,000 tons per annum for 2nd half of 1941.
Ethanol (Ethyl Alcohol)		491	
Benzol		575	
Bottle gas		470	
Vegetable lubs.		50	
Sub. Total		2,586	
Miscellaneous			
Regeneration of lubs.		40	
Russian Imports		-	
Blockade Running		-	Assumed balanced by sinkings.
Sub. Total		40	
TOTAL GREATER GERMANY		8,678	

14th November,1941

SUPPLIES: PETROLEUM & LIQUID OR GASEOUS SUBSTITUTES: GERMAN CONTROLLED EUROPE-1940

1,000 M. TONS

SOURCES	CRUDE OR RAW MATERIAL	FINISHED PRODUCTS	REMARKS
ITALY & CONTROLLED OR OCCUPIED COUNTRIES			
Crude Production			
Italy) Albania)	100	84	From 1.6.40. Loss high, assuming hydrogenation of residues.
Hungary	-	-	
Russian Poland	-	-	
France	40	36	From 1.7.40
Roumania	816	735	From 1.11.40 imports to that date allowed for separately.
Sub. Total	956	855	
Synthetics, etc.			
Italy		-	Taken up in crude outturn figures
France		7	From 1.7.40
H.T. Tars		50	No. L.T. Tars, H.T. taken at 15% yield on available Tars.
Sub. Total		57	
Substitutes. (Benzol, Alcohol, etc.)			
Italy		55	From 1.7.40 Benzol nil Alcohol 55,000
France		75	" 1.7.40 " 25,000 " 50,000
Other occupied countries		48	" 1.5.40 Norway, Denmark) Benzol 39,000
			" 1.6.40 Belgium, Holland) Alcohol 9,000
Bottle Gas (incl. Methane)		25	
Vegetable Lubs.		20	
Sub. Total		223	
Miscellaneous.			
Regeneration of lubs.		20	
Imports Roumania		124	Italy 1.7.40 - 31.10.40. Other Countries nil.
Sub. Total		144	
TOTAL		1,279	

14th November, 1941

SUPPLIES: PETROLEUM & LIQUID OR GASEOUS SUBSTITUTES: GERMAN CONTROLLED EUROPE
1.1.41 - 30.6.41

1,000 M. Tons

SOURCES	CRUDE OR RAW MATERIAL	FINISHED PRODUCTS	REMARKS
ITALY & CONTROLLED OR OCCUPIED COUNTRIES			
Crude Production			
Italy) Albania)	80	70	Assuming interrupted production resulting from Greek war.
Hungary	170	153	From 1.1.41
Russian Poland	-	-	Negligible during 1st half year.
France	40	36	
Roumania	2,603	2,340	
Sub. Total	2,893	2,599	
Synthetic, etc.			
Italy		-	Taken up in Crude outturn figures.
France		7	
H.T. Tars		50	
Sub. Total		57	
Substitutes (Benzol, Alcohol, etc.)			
Italy		55	Benzol nil Alcohol 55,000
France		175	" 25,000 " 150,000
Other occupied Countries		47	" 36,000 " 11,000
Italy: Bottle Gas (Incl. Methane)		25	
Vegetable lubs		20	
Sub. Total		322	
Miscellaneous			
Regeneration of lubs.		20	
Exports Roumania		-154	Roumanian Production taken from 1.1.41. Subtract figure for exports to Russia & Turkey, Sweden, Switzerland, Finland.
Sub. Total		-134	
TOTAL		2,844	

14th November,1941

SUPPLIES: PETROLEUM & LIQUID OR GASEOUS SUBSTITUTES: GERMAN CONTROLLED EUROPE: 1.7.41 - 31.12.41

1,000 M. Tons

SOURCES	CRUDE OR RAW MATERIAL	FINISHED PRODUCTS	REMARKS
ITALY & CONTROLLED OR OCCUPIED COUNTRIES			
Crude Production			
Italy, Albania	125	105	Full rate of 250,000 tons. Assuming hydrogenation to max. aviation.
Hungary	240	216	Full rate 480,000 tons.
Russian Poland	95	86	Half normal rate of production.
France	40	36	Full rate
Roumania	2,800	2,520	
Sub. Total	3,300	2,963	
Synthetics, etc.			
Italy	-	-	See crude outturn figures.
France		7	
H.T.Tars		50	
Sub. Total		57	
Substitutes (Benzol, Alcohol, etc.)			
Italy		60	Benzol nil: Alcohol 60,000
France		175	" 25,000: " 150,000
Other occupied Countries		48	" 37,000: " 11,000
Italy: Bottled Gas (incl.Methane)		25	
Vegetable Lubs.		20	
Sub. Total		328	
Miscellaneous			
Regeneration of lubs.		20	
Exports Roumania		-100	Switzerland 85,000
Sub. Total		-80	
TOTAL		3,268	

SUPPLIES: PETROLEUM & LIQUID OR GASEOUS SUBSTITUTES: GERMAN CONTROLLED EUROPE: 1942.

1,000 M. Tons

SOURCES	CRUDE OR RAW MATERIAL	FINISHED PRODUCTS.	REMARKS.
ITALY & CONTROLLED OR OCCUPIED COUNTRIES.			
Crude Production.			
Italy, Albania	250	210	Full rate with hydrogenation of residues.
Hungary	480	432	Full increased rate.
Russian Poland	380	342	Full rate
France	80	72	" "
Roumania	6,000	5,400	" "
Sub. Total	7,190	6,456	
Synthetics, etc.			
Italy		-	See crude output.
France		14	
H.T.Tars		100	
Sub. Total		114	
Substitutes (Benzol, Alcohol, etc.)			
Italy		365	Benzol nil: Alcohol 365,000
France		852	" 52,000: " 800,000
Other occupied Countries		269	Belgium, Holland, Others } Benzol 77,000: Alcohol 192,000.
Bottle Gas (incl. Methane)		50	
Vegetable Lubs.		40	
Sub.Total		1,576	
Miscellaneous			
Regeneration of lub.		40	
Roumania exports		-186	Switzerland 174,000
Imports		-	
Sub. Total		-146	
TOTAL		8,000	

APPENDIX VI.

TRANSIT AND PROCESS STOCKS.

NOVEMBER 1941.

	tons	Tons
TRANSIT OIL.		874,000
Rail tank cars	390,000	
Danube	172,000	
German Inland Waterways	43,000	
Sea-going tankers	69,000	
Essential transit storage	200,000	
PROCESS OIL.		550,000
Crude in gathering lines pumping stations and fields in Rumania.	280,000	
Crude at Refineries in Rumania.	140,000	
Crude in gathering lines and fields in Axis Europe (Rumania excepted).	54,000	
Crude at Refineries in Axis Europe (Rumania excepted).	75,000	

SELECTION OF INTELLIGENCE REPORTS.
(The approximate dates when reports were received are shown in parenthesis.)

RESTRICTION ON OIL CONSUMPTION.

GERMANY.

In November 1939 an order was issued by the Reich Ministry of Transport that the consumption of petrol must be reduced to 15% of normal. The use of motor cars for private purposes was forbidden.

(January 1940.)

2. The use of taxis was limited to doctors, nurses, strangers with heavy luggage and sick persons, or to cases of special license under Police authority. The ration was reduced to 1½ gallons a day. A number of cases had been reported against motorists for using cars for pleasure purposes.

(April 1940.)

3. Mr. Berthoud quoted a report from a German petroleum expert to the effect that the number of civilian cars in Germany had been reduced to 20% of pre-war figures. Only small cars with a capacity of 2 litres or less were allowed, so that the petrol consumption was probably only about 15% of the pre-war figure.

(May 1940.)

4. The restriction on the use of motor cars had been tightened. No taxis were available in Berlin and East Prussia. These stringent restrictions in force in East Prussia and Berlin were extended to the Nazi Party and Army and Government officials. The number of cars in use by the General Staff had been reduced by 75%; even doctors were only allowed 9 gallons a month.

(July 1940.)

5. A prisoner-of-war who was an oil controller in East Prussia stated that throughout Germany no private cars above 2½ litres were allowed to be used except by higher Nazi officials. In East Prussia, petrol was reserved for military service requirements. Road vehicles ran on butane which was issued only for urgent business needs. It was stated that butane was used extensively in Germany for lorries and private cars and that producer gas had been rarely used. Petrol was diluted with ethyl alcohol, even for military purposes. Only 10% of the taxis were allowed to run. 60 - 70% of private cars were laid up in East Prussia. There were no dangers of shortage of petrol for military purposes but there was a definite shortage of diesel oil.

(May 1941.)

6. The Reich Chief of Police issued orders recently restricting taxi services to the police area in which they were registered. It was forbidden to use them during the day time for any purpose for which other conveyances existed. (

(May 1941)

7. In East Prussia, road transport was prohibited except where it was impossible to use train or boat. Then it was only allowed if return freights were available. Still further restrictions on taxis were reported.

(July 1941)

8. It was reported that a transport firm received gas in cylinders and sufficient supplies of motor spirit including synthetic spirit. Supplies of diesel oil were meagre and were lower than all other stocks. Only 60%

of the quantity supplied at the beginning of the year was allowed. The radius of activity of lorries without special permits had been reduced from 50 to 10 km.

(July 1941.)

The same firm was reported to have received sufficient petrol up to June 1941 to cover its requirements. 50% only of the normal figure was received in July and only 30% in August and September. The September allowance was fully used up by the middle of that month.

(September 1941.)

9. The petrol allowance for individuals who had so far been allowed to use cars, was reduced by 50% for 1st October 1941. Motor cyclists received one gallon per month instead of two (October 1941). The ration for taxis in Berlin was said to be less than 20 gallons per month. The same news was received from another source and it was pointed out that there were in any case very few privileged persons with authority to use cars.

(October 1941.)

10. A British Consular Official returned from internment in the Rhineland reported that petrol for motor cars was scarcer than ever. No private cars were allowed in the area except a very few acting as delivery vans.

(October 1941.)

11. Early in July retail dealers were advised by the authorities that they would henceforth receive only 85% of the quantity of gas oil to which the coupons from their customers would otherwise have entitled them. Operators of large and medium passenger cars permitted for business or professional purposes were ordered to replace them with light weight cars. If these smaller cars were not available on the market, the authorities

proposed to requisition light cars laid up through lack of license.
(November 1941.)

12. A source who was in Berlin in the middle of October reported that a very strict order had been issued restricting the use of petrol for cleaning dirty engine and aircraft parts. Some special products were to be provided for this purpose.
(November 1941.)

FRANCE.

1. An Oil Manager returned from France gave the monthly consumption of oil products in the occupied zone as 34,000 tons and in the unoccupied zone 29,000 tons plus 14,000 tons of bunkers.
(March 1941)

2. There was an almost total lack of all types of automobile fuel in France. (September 1941.)

3. The distribution of petrol in France was reported to have increased for mines working in the metallurgical industries. Mines working directly for the Germans were in no way limited and obtained the quantities of petrol asked for. Report added that it must be remembered that both petrol and fuel or gas oil are synthetic products manufactured by the Germans. On the otherhand the lubricating oil question was acute.
(October 1941.)

4. Passenger services have been further restricted on the French railways partly owing to the shortage of lubricants.
(October 1941.)

5. One of the chief problems in connection with the present French harvest is the fact that the majority of threshing machines were operated

by petrol and are consequently lying idle through lack of fuel.
(October 1941.)

ITALY

1. Additional stringent measures were ordered for the restriction of the use of motor spirit. It was forbidden to use any type of automobile on Sundays or Holidays. This order covered the vehicles running on substitute fuels also. For those cars which were permitted to run the ration of motor spirit was reduced in May to 2½ gallons per month for 10 h.p. cars and 5 gallons for 11 to 15 h.p. cars. The number of taxis was still further restricted in June. There were strong indications of the continued conversion of merchant shipping from oil to coal.
(July 1941.)

2. It was reported by a leading oil expert returned from Italy that stocks of oil at the end of 1940 were probably under 1 million tons. Another expert's report stated that stocks of fuel oil were severely restricted and there was a probable shortage of certain grades of lubricating oils. There was also a drive for the return of used lubricating oils for regeneration.

3. It was reported that the Ministry of Corporations had decreed that all retail coupons for spirit for private cars would be cancelled on the 1st October as all available petrol was reserved for the armed forces. After that date only cars using substitute fuels would be allowed to operate.
(July 1941.)

HOLLAND

Petrol stocks were reserved for doctors, and omnibuses in Amsterdam

had to operate on producer gas as far as possible.

(August 1941)

DENMARK

1. Oil stocks were very low and 2,500 tons a month were being imported from Germany. (February 1941)

2. There were further reports of an absence of petrol for lorries. The unsuitability of producer gas as fuel for heavy traction work was also mentioned. Fishermen were receiving about 15% of normal requirements of fuel oil. (July 1941.)

BELGIUM

1. Very few cars were in circulation; all those over 14 h.p. were prohibited. There was a shortage of lubricating oil and grease and issues were curtailed even for vehicles using gas generators. A reliable report gave the consumption of petrol as only 10% of normal. (April 1941.)

2. The shortage of lubricating oil was causing difficulty on railways. (June 1941.)

SUBSTITUTE FUELS.

GERMANY.

1. Omnibuses were running mostly on compressed gas or producer gas. (April 1940.)

2. A decree had been issued that all lorries with loads of 5 tons and over were to be converted at once to the use of propane and butane. Then lorries of lighter loads were to be converted until all were completed. (April 1940.)

3. A report from Berne stated that 2½ million cubic metres of sewage gas was used as motor fuel by the town of Stuttgart., mainly on municipal services.

(November 1940)

4. A Berlin paper mentioned that stationary diesel motors consuming less than 12 tons of fuel per annum had to convert to solid or gas fuel.

(April 1941.)

5. General Von Schell stated that the number of vehicles in October 1940 operating on bottled gas was 60,000 and on producer gas 14,000.

(June 1941.)

6. According to General Von Schell 180,000 lorries in Germany and occupied countries were using substitute fuels, saving 648,000 tons of petrol annually.

(July 1941.)

7. A very large proportion of military motor transport were operated by lorries which did not use petrol. Many of the lorries used methane gas saving 120,000 tons of petrol annually.

(July 1941.)

8. The press reported that tests had been made of generator gas and owing to the shortage of timber, hard coal would be used as fuel. Supplies of this were stated to be adequate at production centres but transport difficulties would no doubt arise.

(September 1941.)

9. A Director of an industrial concern stated that the authorities were continually sending instructions for his firm's vehicles to be converted to operate on wood gas. Although generators had been on order since the beginning of July, none were available.

(September 1941.)

10. Steps would be taken in the near future to ensure the greater use of wood gas for ships and barges on internal waterways.

(November 1941.)

11. Military tractors used for towing aircraft on a large Berlin aerodrome were said now to be equipped with cylinders. This was not the case even a few weeks previously. (November 1941.)

FRANCE

1. Supplies in both zones were very limited and extensive use was being made of alcohol from wines. (July 1941.)

2. A grave scarcity of wood for gas generators was reported. It was estimated that by May 1941 57,000 vehicles had been converted to producer gas.

(August 1941.)

ITALY

The use of methane as a substitute fuel was stated to have made great progress. About one third of the taxis and omnibuses in Rome were using methane as a fuel. It was stated officially that 20,000 motor cars and 2,000 omnibuses had been adapted to run on methane which was also used by nearly all of the 7,000 rail cars.

(April 1941.)

HOLLAND

1. Gas generators were being constructed in large quantities but harvesting was being held back for lack of motor fuel.

(August 1940.)

2. About 5,000 vehicles including 1,800 lorries were running on producer gas; this is about 5% of the total number running in 1939.

(June 1941.)

DENMARK

1. At the end of April, about 9,200 lorries out of 43,000 pre-war, were running on producer gas. All German lorries in Denmark were said to be fitted with generators. Owing to the lack of wood, attention was being paid to the development of peat fuel.
(August 1941.)

NORWAY

1. At the end of January 1941 about 3,000 vehicles were using wood fuel and 1,000 were using carbide. The State was encouraging the use of substitute fuels and helping farmers to purchase generators for their tractors. It had also provided money to equip 100 fishing vessels with generators. (June 1941.)

2. About 8,000 vehicles were operated on producer gas at the end of July and 14,000 were expected to be in use by the end of 1941.
(August 1941.)

GENERAL

1. In August reports were received that withdrawals had been made from main petrol reserves at Starnberg near Munich, and that stocks in the Vienna area had been reduced by 500,000 tons.
(August 1941.)

2. A thoroughly reliable source reported that the Boschwerke (Stuttgart) had received instructions to convert their source of power from diesel motors to water turbines in order to save fuel. He also stated that this order was due to the severe strain on the oil supplies as a result of the Russian Campaign. (August 1941.)

3. The owners of three or four Swedish motor vessels were persuaded by the Germans to enter the ore trade, by promise of oil fuel, but by the end of the month there was evidently a change in German policy because the owners were informed that they could no longer count on obtaining bunker fuel from German ports, and the ships were withdrawn. (September 1941.)

4. News has been received from a good source that it has been stated in a secret German report that oil supplies in Germany were sufficient for eight months. The date of the secret report is not known. (September 1941.)

5. A source who is considered reliable stated that he was told by a director of a large international oil company in Germany that at the present rate of consumption of petroleum Germany's reserves would be exhausted by the middle of 1942. (September 1941.)

6. Mr. W. L. Shirer, an American journalist who was in Berlin (1934-41) wrote as at December 1940 "Civilian consumption of oil has been reduced to almost nothing. No private cars and practically no delivery trucks are allowed to operate. Oil is prohibited for heating purposes. When the war started, Germany had large stocks of oil on hand, and she obtained quite a windfall in Norway, Holland and Belgium". He gave synthetic petrol production at the end of 1940 at the rate of 4 million tons per annum. His guess was that Germany had enough oil or could get enough oil to satisfy her military requirements for at least two more years, i.e. to end of 1942.

7. An American journalist who was in Berlin from June 1940 to June 1941

stated thatanxiety about German petroleum position was evident and it may not be realised to what extent consumption by industrial and public transport had been reduced. This, together with the effect of air attacks on sea-borne traffic, had thrown an immense burden on German railways and canals.

8. An excellent source reported he had heard through the German Economic Mission in Paris that since the beginning of the Russian campaign the Germans have been drawing on their reserves of petroleum products at the rate of 500,000 tons a month. (October 1941.)

9. According to reports from Vichy, German fuel reserves have been seriously eaten into. (October 1941.)

10. A high Swedish official who had for a long time previously denied reports of oil shortage in Germany, stated that he had received most reliable information that for the first time during this war, the German military machine was definitely experiencing difficulties owing to oil shortage. The German military machine is now using over 2 million tons per month, whereas production did not exceed 14½ millions per annum. (October 1941.)

See Original copy for three charts belonging to this report, as follows:

1. GERMANY - Chart Showing Monthly Civil & Armed Forces Consumption Since Outbreak of War.

2. GERMANY - Chart showing monthly Intake and Consumption since outbreak of War.

3. GERMANY - Chart Showing Oil Movements since outbreak of War.

BY SAFE HAND

S.K.104

SECRET

BRITISH EMBASSY
WASHINGTON, D. C.

January 16, 1945

Dear Brandon,

GERMAN OIL POSITION

I enclose a copy of letter I have received from London which I trust you will find extremely interesting. In this letter London have endeavoured to indicate the extent to which the Germans have been able to hoard small quantities of gasoline in the past two or three months for the Rundstedt offensive. The margin was slight and it is believed that an increase in consumption on the Eastern Front would put them substantially in the red. With the opening of the Russian offensive this should be now the case.

This letter only deals with the estimated gasoline position and for that reason perhaps it is not as useful as it might have been for comparison with the consumption estimates now being prepared on this side.

Yours sincerely,

S. Kilbey

B.H.Grove, Esq.,
Foreign Economic Administration,
Washington, D.C.

cc: Norris C.Wood, Esq.
Major R.R.Munoz
Lt.Cdr.Paul L.Hopper
Major I.E.Stark
Walter Levy, Esq.