

**THE PETROLEUM REFINING TRADE**

*Note.*—For information regarding the scope of the Census, instructions given to firms for making returns, and definitions of the terms used in this report, reference should be made to the Introductory Notes on pages v to xviii.

**Introductory**

This trade comprises firms that were engaged wholly or mainly in the production of crude petroleum from oil shale and the distilling, refining or blending of petroleum oils. As separate particulars for England and Wales and for Scotland cannot be published for the year 1930 owing to the risk of disclosure of information relating to individual firms, the summary table (I) and the tables showing details of the power equipment (IV) and coal, coke and electricity used (V) are not appended to this report. The whole of this information is available in the tables given in the report itself.

The following table shows the main results of the Censuses of 1930 and 1924 in respect of firms in Great Britain. At both Censuses all firms in this trade employed more than ten persons on the average.

Particulars	Unit	1930	1924
Value of products made and of work done (Gross output) ... ..	£'000	16,087	14,196
Cost of materials used ... ..	"	8,321	10,733
Estimated duty on spirit ... ..	"	2,050	—
Net output (excluding estimated duty on spirit) ...	"	5,716	3,463
Average number of persons employed ... ..	No.	5,626	6,905
Net output per person employed ... ..	£	1,016*	502
Power available :—			
Prime movers ... ..	H.P.	34,276	42,547
Electric motors driven by purchased electricity	"	8,926	4,586
Number of returns ... ..	No.	25	31
Number of establishments ... ..	"	26	†

\* Excluding estimated duty on spirit.

† Not available.

**Size of firms.**—In the following table the main particulars recorded at the Census of 1930 are grouped according to the average numbers of persons shown in the returns :—

Size of firm (average numbers employed)	Number of returns	Gross output	Net output*	Average number of persons employed	Net output per person employed*
11-99 ...	No. 6	£'000 387	£'000 124	No. 239	£ 519
100-199 ...	10	4,009	1,252	1,495	837
200-1,499 ...	9	11,691	4,340	3,892	1,115
TOTAL ...	25	16,087	5,716	5,626	1,016

\* Excluding estimated duty on spirit.

**Regional distribution.**—In the following table the results recorded at the Censuses of 1930 and 1924 are grouped according to the principal areas\* of Great Britain in which firms in this trade are situated:—

Area	Number of returns	Gross output	Net output†	Average number of persons employed	Net output per person employed†
	No.	£'000	£'000	No.	£
I ...	1930	6	4,750	1,022	1,594
	1924	10	2,215	528	1,694
Other areas	1930	19	11,337	4,087	888
	1924	21	11,981	2,935	5,211
TOTAL	1930	25	16,087	5,716	1,016
	1924	31	14,196	3,463	6,905

† Excluding estimated duty on spirit in 1930.

**Northern Ireland.**—No production was recorded for Northern Ireland in 1930 or in 1924.

### Production

**Total output of crude shale oil.**—The total output of crude shale oil recorded for 1930 was 38,181,000 gallons, this total including oil that was refined or otherwise used in the producers' works as well as that sold. Corresponding information was not obtained at the 1924 Census.

**Total output of refined petroleum.**—The following table shows the total quantities of the principal kinds of petroleum oils refined in Great Britain as returned for 1930 on schedules for the Petroleum Refining Trade. The particulars given are inclusive of petroleum refined on commission and also of any quantities used at the refineries. Corresponding information for 1924 is not available.

Separate particulars of petroleum oils refined from crude and from semi-refined oils could not be required compulsorily but were supplied in full voluntarily by the companies concerned.

Refined petroleum oils	Produced from crude oil	Produced from semi-refined oil‡	Total	Entries
	Th. galls.	Th. galls.	Th. galls.	No.
Lamp oil ... ..	42,932	6,143	49,075	9
Motor spirit ... ..	114,390	66,020	180,410	16
Other spirit ... ..	4,797	20,532	25,329	14
Lubricating oil ... ..	6,269	17,163	23,432	8
Gas oil ... ..	20,304	44,265	64,569	13
Fuel oil ... ..	220,578	28,764	249,342	11
Other liquid products (including road oil) ...	10,382	7,059	17,441	6
TOTAL—Refined petroleum oils ... ..	419,652	189,946	609,598	...

‡ Including some fuel oil and kerosene imported as such.

\* For particulars see page xviii.

**Output for sale.**—The following table shows the quantity and value of the principal classes of refined petroleum produced for sale, and the value of other principal products of petroleum refining in 1930 and 1924. The value figures shown for 1930 in respect of motor spirit and other spirit are inclusive of the duty of 4d. per gallon imposed by the Finance Act, 1928, on light oils obtained from hydrocarbon oils. It is not possible to state precisely the total amount of duty included in the values shown in the Census returns but, after allowing for drawbacks in respect of dutiable products exported and for light oils obtained from shale oil and from crude petroleum produced in this country, it is estimated that, of the total value of £7,861,000 recorded for the products in question, the sum of £2,050,000 represents the approximate addition on account of duty.

Kind of product	1930			1924	
	Quantity	Value	Entries	Quantity	Value
	Th. galls.	£'000	No.	Th. galls.	£'000
Refined petroleum:—					
Lamp oil ... ..	47,753	848	8	82,738	1,807
Motor spirit... ..	171,839	6,805*	15	151,098	6,044
Other spirit ... ..	24,418	1,056*	13	5,016	269
Lubricating oil ... ..	23,420	1,650	8	8,983	536
Gas oil ... ..	64,049	696	12	18,852	315
Fuel oil ... ..	239,230	2,066	11	240,278	2,590
Other liquid products ...	26,371	382	6	9,650	350
TOTAL—Refined petroleum	597,080	13,503	...	516,615	11,911
Crude shale oil ... ..	37,259	512	7	51,356	1,006
Paraffin wax ... ..	281	241	...	383	421
Other principal products made and work done† ... ..	...	76	7	...	210
TOTAL—PRINCIPAL PRODUCTS	...	14,332	...	...	13,548

\* Including duty.

† Including petroleum coke, shale resin and commission refining.

**Prices.**—The average selling values of petroleum products in 1930 and 1924, as calculated from the Census returns, are shown in the following table. It should be borne in mind that these comparisons do not take account of any changes that may have occurred since the earlier year in the quality of oils included under the specified descriptions.

Kind of product	Average value		1930 as a percentage of 1924
	1930	1924	
Refined petroleum :—	d. per gall.	d. per gall.	Per cent.
Lamp oil ... ..	4.26	5.24	81.3
Motor spirit ... ..	9.50*	9.60	99.0
Other spirit ... ..	10.38*	12.88	80.6
Lubricating oil ... ..	16.91	14.32	118.1
Gas oil ... ..	2.61	4.01	65.1
Fuel oil ... ..	2.07	2.59	79.9
Other liquid products ... ..	3.48	8.69	40.0
Paraffin wax ... ..	s. per cwt. 17.19	s. per cwt. 21.98	78.2
Crude shale oil ... ..	d. per gall. 3.29	d. per gall. 4.70	70.0

\* Including duty of 4d. per gallon.

**Volume of production in 1930 and 1924.**—The following table compares the volume of production of petroleum products in 1930 and 1924 :—

Kind of product	Total production			1930 as a percentage of 1924
	1930	1924		
	As returned	As returned	At 1930 average values	Per cent.
Refined petroleum :—	£'000	£'000	£'000	Per cent.
Lamp oil ... ..	848	1,807	1,469	58
Motor spirit ... ..	6,805	6,044	5,984	114
Other spirit ... ..	1,056	269	217	487
Lubricating oil ... ..	1,650	536	633	261
Gas oil ... ..	696	315	205	340
Fuel oil ... ..	2,066	2,590	2,069	100
Other liquid products ... ..	382	350	140	273
Total—Refined petroleum...	13,503	11,911	10,717	126
Paraffin wax ... ..	241	421	332	73
Crude shale oil ... ..	512	1,006	704	73
Other principal products made and work done ... ..	76	210	185	41
TOTAL ... ..	14,332	13,548	11,938	120

**Production, exports and imports.**—The following table shows, in relation to production, the quantities of the principal classes of refined petroleum exported from the United Kingdom in 1930 and 1924, together with the quantities imported and retained. The 1924 figures of production represent the output for sale while those for 1930 relate to the total output which was, for all classes of petroleum oils together, in excess of the output for sale by about 2 per cent. (see pages 378-9). Similar particulars regarding paraffin wax are also included in the table.

Kind of goods	Production	Exports	Proportion of production exported	Retained imports	Available for use in the United Kingdom	Share of home market held by British products
					Th. galls.	Th. galls.
Refined petroleum :—	Th. galls.	Th. galls.	Per cent.	Th. galls.	Th. galls.	Per cent.
Lamp oil	{ 1930 49,075 1924 82,783	{ 14,572 18,069	{ 29.7 21.8	{ 231,134 115,276	{ 265,637 179,990	{ 13.0 36.0
Motor spirit	{ 1930 180,410 1924 151,100	{ 31,883 24,672	{ 17.7 16.3	{ 908,728 379,206	{ 1,057,255 505,634	{ 14.0 25.0
Other spirit	{ 1930 25,329 1924 5,084	{ 4,288 421	{ 16.9 8.3	{ 18,154 3,034	{ 39,195 7,697	{ 53.7 60.6
Lubricating oil	{ 1930 23,432 1924 9,502	{ 7,105 7,600	{ 30.3 80.0	{ 98,982 100,062	{ 115,309 101,964	{ 14.2 1.9
Gas oil ...	{ 1930 64,569 1924 18,856	{ 8,050 750	{ 12.5 4.0	{ 128,154 65,620	{ 184,673 83,726	{ 30.6 21.6
Fuel oil ...	{ 1930 249,342 1924 240,518	{ 37,183 55,890	{ 14.9 23.2	{ 485,365 383,424	{ 697,524 568,052	{ 30.4 32.5
Other liquid products	{ 1930 17,441 1924 9,722	{ 465 70	{ 2.7 0.7	{ 224 1,268	{ 17,200 10,920	{ 98.7 88.4
Total—Refined petroleum...	{ 1930 609,598 1924 517,565	{ 103,546 107,472	{ 17.0 20.8	{ 1,870,741 1,047,890	{ 2,376,793 1,457,983	{ 21.3 28.1
Paraffin wax...	Th. cwts.	Th. cwts.		Th. cwts.	Th. cwts.	
	{ 1930 281 1924 383	{ 140 218	{ 50.0 56.9	{ 1,124 1,250	{ 1,265 1,415	{ 11.1 11.6

Retained imports of crude petroleum in 1930 amounted to 460,967,000 gallons, the output of crude shale oil was recorded as 38,181,000 gallons, and the total quantity of crude oil available for refining in this country in that year was accordingly 499,148,000 gallons. The output of refined petroleum oils in 1930 was in excess of this total by over 20 per cent., indicating that a considerable proportion of the oil imported as refined was subjected to further refining processes in this country. The table on page 378 shows that only 69 per cent. of the total output was refined from crude oil. A close comparison between the quantity of crude oil available in the calendar year and that of refined oil produced therefrom

cannot however be made, as the returns of certain important refining companies related to the period of twelve months ended 31st March, 1931.

**Other products.**—In addition to the output shown in the table of principal products on page 379, the following goods were produced in 1930 and 1924 by firms that made their returns on schedules for the Petroleum Refining Trade. These goods are dealt with in the reports on those trades in which the principal output was recorded.

Kind of goods	1930		1924	
	Value		Value	
	£'000		£'000	
Sulphate of ammonia ... ..	164	601	(36,900 tons)	(51,600 tons)
Other goods (mainly asphalt and bitumen)...	1,591	237		
<b>TOTAL</b> ... ..	<b>1,755</b>	<b>838</b>		

### Employment and Wages

**Employment.**—The following table shows the average numbers of persons employed in 1930 and 1924 :—

Persons employed	Males		Females		Total	
	Under 18	All ages	Under 18	All ages	Under 18	All ages
<b>1930</b>						
Operatives (average for the year)	208	4,777	—	31	208	4,808
Administrative, technical and clerical staff (as at 18th October) ... ..	49	738	10	80	59	818
<b>TOTAL</b> ... ..	<b>257</b>	<b>5,515</b>	<b>10</b>	<b>111</b>	<b>267</b>	<b>5,626</b>
<b>1924</b>						
Operatives (average for the year)	375	5,982	5	55	380	6,037
Administrative, technical and clerical staff (as at 18th October) ... ..	79	776	13	92	92	868
<b>TOTAL</b> ... ..	<b>454</b>	<b>6,758</b>	<b>18</b>	<b>147</b>	<b>472</b>	<b>6,905</b>

**Wages.**—The available information as to the amount of wages paid in 1930 and 1924 is given on pages 252 and 253.

### Power

The following table shows the capacity of prime movers, electric generators and electric motors ordinarily in use and in reserve or idle in 1930 and 1924 :—

Power equipment	1930			1924		
	Ordinarily in use	In reserve or idle	Total	Ordinarily in use	In reserve or idle	Total
	H.P.	H.P.	H.P.	H.P.	H.P.	H.P.
<b>PRIME MOVERS</b>						
Reciprocating steam engines ... ..	11,661	5,661	17,322	18,927	6,041	24,968
Steam turbines ... ..	9,588	7,160	16,748	7,810	9,550	17,360
Internal combustion engines :—						
Gas ... ..	—	—	—	—	25	25
Petrol, kerosene, or other light oils ... ..	5	25	30	31	73	104
Heavy oils ... ..	76	100	176	—	90	90
<b>TOTAL</b> ... ..	<b>21,330</b>	<b>12,946</b>	<b>34,276</b>	<b>26,768</b>	<b>15,779</b>	<b>42,547</b>
<b>ELECTRIC GENERATORS</b>						
Driven by	Kw.	Kw.	Kw.	Kw.	Kw.	Kw.
Reciprocating steam engines ... ..	5,043	2,693	7,736	7,233	3,857	11,090
Steam turbines ... ..	7,000	5,200	12,200	5,695	7,020	12,715
Internal combustion engines :—						
Petrol, kerosene, or other light oils ... ..	—	16	16	—	—	—
Heavy oils ... ..	—	75	75	—	75	75
<b>TOTAL</b> ... ..	<b>12,043</b>	<b>7,984</b>	<b>20,027</b>	<b>12,928</b>	<b>10,952</b>	<b>23,880</b>
<b>ELECTRIC MOTORS</b>						
Driven by	H.P.	H.P.	H.P.	H.P.	H.P.	H.P.
Electricity generated in same works ... ..	20,927	5,007	25,934	11,785	9,183	20,968
Electricity generated in other works under same ownership ... ..	38	230	268	—	—	—
Purchased electricity	5,462	3,464	8,926	1,848	2,738	4,586
<b>TOTAL</b> ... ..	<b>26,427</b>	<b>8,701</b>	<b>35,128</b>	<b>13,633</b>	<b>11,921</b>	<b>25,554</b>

## Consumption of fuel

The following table shows the quantities of coal, coke and electricity recorded as used in 1930 :—

Kind of fuel used	For power (driving engines)	For other purposes (so far as recorded)
	Tons	Tons
Coal... ..	159,305	213,004*
Coke ... ..	2,186	22,234*
Electricity used for all purposes :—		
Generated in same works ... ..		B.T.U. (Kw.-hrs.) '000
Generated in other works under same ownership ... ..		42,533
Purchased ... ..		22
		2,325
TOTAL—Electricity ... ..		44,880

\* These figures were recorded by firms representing 88.5 per cent. of the net output of the whole trade.

## TABLES

Note.—Owing to the possible disclosure of information relating to individual firms, separate particulars for England and Wales and for Scotland cannot be given.

## I. Summary of results (see page 377)

## II. Production

## A.—TOTAL MAKE OF CERTAIN PETROLEUM PRODUCTS, AS RETURNED ON SCHEDULES FOR THE PETROLEUM REFINING TRADE

Kind of products	Produced from crude oil	Produced from semi-refined oil*	Total
	Th. galls.	Th. galls.	Th. galls.
Refined petroleum :—			
Lamp oil ... ..	42,932	6,143	49,075
Motor spirit ... ..	114,390	66,020	180,410
Other spirit ... ..	4,797	20,532	25,329
Lubricating oil ... ..	6,269	17,163	23,432
Gas oil ... ..	20,304	44,265	64,569
Fuel oil ... ..	220,578	28,764	249,342
Other liquid products (including road oil) ... ..	10,382	7,059	17,441
Total—Refined petroleum ... ..	419,652	189,946	609,598
Crude shale oil ... ..	—	—	38,181
Paraffin wax ... ..	Th. cwts. 281	—	Th. cwts. 281

\* Including some fuel oil and kerosene imported as such.

## B.—OUTPUT SOLD OR ADDED TO STOCK AND WORK DONE

Kind of products and work done	Quantity	Value
	Th. galls.	£'000
Refined petroleum :—		
Lamp oil ... ..	47,753	848
Motor spirit ... ..	171,839	6,805*
Other spirit ... ..	24,418	1,056*
Lubricating oil ... ..	23,420	1,650
Gas oil ... ..	64,049	696
Fuel oil ... ..	239,230	2,066
Other liquid products ... ..	26,371	382
Total—Refined petroleum ... ..	597,080	13,503
Crude shale oil ... ..	37,259	512
Paraffin wax ... ..	Th. cwts. 281	241
Other petroleum products, including refining on commission ... ..	...	76
Sulphate of ammonia ... ..	Th. tons 36.9	164
Other goods (mainly asphalt and bitumen) ... ..	...	1,591
TOTAL VALUE OF PRODUCTS MADE AND OF WORK DONE (GROSS OUTPUT) ... ..	...	16,087

\* Including duty of 4d. per gallon.

### III. Employment

#### A.—NUMBERS EMPLOYED IN WEEK ENDED 18TH OCTOBER, 1930

Persons employed	Males		Females		Males and females	
	Under 18	All ages	Under 18	All ages	Under 18	All ages
Operatives ... ..	211	4,855	—	32	211	4,887
Administrative, technical and clerical staff ... ..	49	738	10	80	59	818
<b>TOTAL</b> ... ..	<b>260</b>	<b>5,593</b>	<b>10</b>	<b>112</b>	<b>270</b>	<b>5,705</b>

#### B.—OPERATIVES EMPLOYED IN ONE WEEK IN EACH MONTH OF 1930

Week ended	Males and females	Week ended	Males and females
January 18 ... ..	4,642	July 19 ... ..	4,946
February 15 ... ..	4,662	August 16... ..	4,965
March 15 ... ..	4,687	September 13 ... ..	4,967
April 12 ... ..	4,737	October 18 ... ..	4,887
May 17 ... ..	4,774	November 15 ... ..	4,827
June 21 ... ..	4,774	December 13 ... ..	4,834
AVERAGE FOR THE TWELVE MONTHS ... ..			4,808

#### IV. Power (see page 383)

#### V. Consumption of fuel (see page 384)