

THE ELECTRICAL ENGINEERING TRADE

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THE ELECTRICAL ENGINEERING 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 covers the manufacture of electrical machinery, batteries, insulated cables, telegraph, telephone and wireless apparatus and other electrical plant, appliances and accessories. It also covers constructional or "contract" work done by manufacturers of electrical goods outside their factories, but similar work done by electrical contracting firms that were not engaged in manufacture is dealt with in the report on the Building and Contracting Trade. Electrical work done by Electricity Supply Undertakings, the General Post Office and other public utility concerns is also excluded.

The scope of the figures shown for 1924 differs somewhat from that of those for 1930 owing to the assignment of certain firms at the later Census to trades other than the Electrical Engineering Trade. Some of these firms were engaged in the manufacture of electric lighting and starting sets for motor vehicles and were included in the Motor and Cycle Trade for 1930, the remainder being electrical contracting firms that were assigned to the Building and Contracting Trade for that year. While both changes affect the comparability of the figures for the two years in respect of gross output, persons employed, etc., the former change does not impair the comparability of the particulars given in respect of the principal output of the Electrical Engineering Trade. The latter change may have resulted in a slight over-statement of the amount of electrical contract work recorded for this trade in 1924, but had no appreciable effect on the totals given under the various headings of manufactured goods.

The following table shows the main results of the Censuses of 1930 and 1924 in respect of firms in Great Britain that employed an average of more than ten persons :—

Particulars	Unit	1930	1924
Value of goods made and work done (Gross output)	£'000	87,674	68,961
Cost of materials used	"	42,513	35,735
Paid for work given out to other firms	"	328	247
Net output	"	44,833	32,979
Average number of persons employed	No.	191,970	150,610
Net output per person employed	£	234	219
Power available :—			
Prime movers	H.P.	33,998	47,945
Electric motors driven by purchased electricity	"	215,932	113,200
Number of returns	No.	653	709
Number of establishments	"	767	*

* Not available.

Deficiencies in 1930 aggregates.—The number of firms stating that they employed not more than ten persons on the average at the 1930 Census was 1,200, and the total number of their employees

was 5,748. No information was received from 115 firms, generally of the same class. The total number of persons employed in 1930 by the excluded firms may, therefore, be estimated as about 6,300, or somewhat more than 3 per cent. of the total number of employees in the trade. It is probable, however, that the employment figures reported by some of these small firms covered the whole of their staff, including those ordinarily required for distributive as well as for productive work.

For 1924, the number of employees reported by the 808 firms that employed not more than ten persons was 3,212, the recorded output being as follows :—

	£'000
Electrical machinery and parts	72
Other electrical goods	539
Contract and repair work	578
TOTAL	1,189

In addition, 780 firms gave no particulars of their business for 1924; the majority of these had small businesses, consisting chiefly in wiring and other electrical work on customers' premises.

The recorded output of the small firms consisted very largely of "contract and repair" work, which, as already explained, was allocated to the Building and Contracting Trade for 1930 when not associated with manufacture, and the decline of 273 in the total number of small firms in this trade in 1930 compared with 1924 may perhaps be attributed to this circumstance. While there is considerable uncertainty as to the extent of the productive work done by the small firms in both years, it appears probable from the information available that the output of new goods which has escaped record by their exclusion did not exceed 2 per cent. of the total value of electrical goods manufactured in 1930.

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
	No.	£'000	£'000	No.	£
11-24 ...	165	1,185	611	2,850	215
25-49 ...	139	1,953	963	4,968	194
50-99 ...	118	3,276	1,633	8,172	200
100-199 ...	76	4,634	2,274	10,535	216
200-299 ...	36	4,325	2,013	9,238	218
300-399 ...	29	5,223	2,494	10,406	240
400-499 ...	10	1,683	851	4,580	186
500-749 ...	23	6,470	3,278	13,931	235
750-999 ...	20	7,383	4,054	17,077	237
1,000-1,499 ...	13	7,530	3,585	16,214	221
1,500 and over	24	44,012	23,077	93,999	246
TOTAL ...	653	87,674	44,833	191,970	234

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.	£
1 ... { 1930	310	36,568	18,546	76,554	242
... { 1924	310	31,473	14,472	62,151	233
2 ... { 1930	78	21,321	11,121	45,346	245
... { 1924	87	18,485	8,535	38,570	221
3 ... { 1930	33	1,685	856	3,637	235
... { 1924	46	1,075	485	2,844	171
4 ... { 1930	18	2,356	1,220	5,663	215
... { 1924	19	895	440	2,995	147
5 ... { 1930	99	14,741	7,726	37,487	206
... { 1924	94	9,960	5,606	27,546	204
6 ... { 1930	75	9,909	4,877	20,646	236
... { 1924	90	5,736	2,793	12,833	218
7 and 8 { 1930	11	107	61	252	242
... { 1924	9	127	69	507	136
9 ... { 1930	18	387	166	887	188
... { 1924	31	540	246	1,528	161
10 ... { 1930	11	600	260	1,498	173
... { 1924	23	670	333	1,636	204
TOTAL { 1930	653	87,674	44,833	191,970	234
... { 1924	709	68,961	32,979	150,610	219

While no difficulty was usually found in furnishing accurate regional particulars in respect of goods manufactured, some firms were unable to apportion the work done outside their factories (contract, repair, etc., work) as required, and in those cases the whole of the work was allocated to the area in which the main establishment was situated.

Northern Ireland.—The following table summarises the particulars recorded at the Census of Production taken by the Government of Northern Ireland for 1930 together with those furnished at the 1924 Census. The 1930 figures relate to firms that employed an average of more than *five* persons, while those for 1924 relate

* For particulars see page xviii.

to *all* firms. Owing to the possible disclosure of information relating to individual firms, detailed particulars of the output cannot be given.

Particulars	Unit	1930	1924
Value of goods made and work done (Gross output)	£'000	201	156
Cost of materials used	"	143	98
Net output	"	58	58
Average number of persons employed	No.	352	274
Net output per person employed	£	165	212
Power available :—			
Prime movers	H.P.	—	—
Electric motors driven by purchased electricity	"	447	167

Sub-divisions of the industry.—The following table summarises the results of the 1930 Census by groups, each of which comprises firms whose main business consisted in the class of production specified in the first column. Comparable figures for 1924 can only be given for groups 1 and 2.

Group	Number of returns	Gross output	Net output	Average number of persons employed	Net output per person employed
	No.	£'000	£'000	No.	£
1. Electrical machinery ... { 1930	133	24,797	13,443	64,742	208
... { 1924	68	19,242	10,325	51,531	200
2. Electric wires and cables { 1930	43	24,624	9,529	36,218	263
... { 1924	42	24,097	8,434	35,456	238
3. Telegraph and telephone apparatus 1930	18	7,976	5,260	18,640	282
4. Wireless apparatus (except valves) 1930	87	5,870	3,112	13,582	226
5. Wireless valves and electric lamps 1930	17	2,829	1,967	6,577	299
6. Primary batteries and accumulators 1930	39	6,488	3,289	13,606	242
7. Electric lighting accessories and fittings 1930	49	1,689	939	4,935	190
8. All other... .. 1930	267	13,401	7,294	33,670	217
Total—(Groups 3–8) { 1930	477	38,253	21,861	91,010	240
... { 1924	599	25,622	14,220	63,623	224
TOTAL—All groups { 1930	653	87,674	44,833	191,970	234
... { 1924	709	68,961	32,979	150,610	219

Production

Summary of production in 1930 and 1924.—The following table shows the values of the principal classes of electrical engineering products manufactured in 1930 and 1924. The figures for both years are inclusive of the output returned on schedules for other trades.

Kind of goods	1930	1924
	Value	Value
	£'000	£'000
Electrical machinery :—		
Generators	1,966	2,302
Motors	4,952	5,650
Converters and transformers	3,001	2,615
Control and switch gear	6,162	3,662
Switchboards	1,839	1,665
Other electrical machinery	1,860	1,723
Parts of electrical machinery, sold separately	1,384	*
Total—Electrical machinery	21,164	17,617
Electric wires and cables	19,157	18,660
Telegraph and telephone apparatus	6,076	3,935
Wireless apparatus (except valves)	6,870	4,835
Wireless valves and electric lamps	4,164	4,016
Primary batteries and accumulators	6,378	4,253
Electric lighting accessories and fittings	2,157	1,616
Other electrical appliances and apparatus	11,814	7,900
TOTAL	77,780	62,832

* Parts were included with complete machines in 1924.

The output of the various classes of electrical engineering products is dealt with below in the eight groups specified in the table on page 285. Particulars are also given of the principal descriptions of goods produced by the firms comprising the various groups.

(1) Electrical machinery.—The following table gives particulars of the output in 1930 and 1924 of the specified classes of electrical machinery. Particulars of quantity (number or tonnage) were furnished for a substantial part of the 1930 production but no similar information is available in respect of the output in 1924.

Kind of goods	1930						1924
	Returned on schedules for						Total
	The Electrical Engineering Trade			All trades			
	Quan- tity	Value	Ent- ries	Quan- tity	Value	Ent- ries	Value
	No.	£'000	No.	No.	£'000	No.	£'000
Generators :—							
Alternating current :—							
Under 2,000 kilowatts {	1,669	348	22	1,669	348	22	1,227
2,000 kilowatts and	*	44	3	*	45	5	
under 11,000 kilo- watts	98	401	9	98	401	9	
11,000 kilowatts and over	41	614	6	41	614	6	678
Direct current	7,970	461	37	7,970	461	38	
{	*	92	3	*	97	4	4
Alternating current and direct current, not separately distinguished	—	—	—	—	—	—	397
Total—Generators	...	1,960	...	...	1,966	...	2,302
Motors :—							
Railway and tramway	3,290	682	6	3,290	682	6	1,555
Other motors of 1 H.P. and over :—							
Alternating current :—							
1 H.P. and under {	91,007	2,007	50	91,312	2,014	51	2,195
200 H.P.	*	39	2	*	40	3	
200 H.P. and under 1,000 H.P.	709	350	13	709	350	13	
1,000 H.P. and over	18	41	6	18	41	6	1,655
Direct current	31,857	1,329	38	32,424	1,353	40	
{	*	123	4	*	141	7	7
Not separately dis- tinguished	—	—	—	—	—	—	245
Fractional horse-power motors (i.e. below 1 H.P.)	73,711	323	33	73,711	323	33	†
{	*	8	4	*	8	4	†
Total—Motors ... ..	...	4,902	...	...	4,952	...	5,650
Converters and trans- formers :—							
Rotary (including recti- fiers)	2,780	513	29	2,780	513	29	824
Static	28,560	2,488	23	28,560	2,488	23	1,725
Not separately distin- guished	—	—	—	—	—	—	66

Kind of goods	1930						1924
	Returned on schedules for						Total
	The Electrical Engineering Trade			All trades			
	Quantity	Value	Entries	Quantity	Value	Entries	Value
Control and switch gear	Tons 37,938 *	£'000 5,181 879	No. 54 54	Tons 37,938 *	£'000 5,181 981	No. 54 63	3,662
Switchboards (other than telegraph and telephone) ...	...	1,837	56	...	1,839	60	
Vacuum cleaners, electrically worked ...	No. 37,534	524	6	No. 37,550	524	7	1,723
Other electrical machinery, including motor generators, ignition magnetos, etc....	...	848	...	...	1,336	...	
Parts of electrical machinery (sold separately) ...	...	1,280	57	...	1,384	61	‡
TOTAL—Electrical machinery and parts ...	...	20,412	...	...	21,164	...	17,617

* Quantity not stated.
 † Not recorded separately in 1924.
 ‡ Parts were included with complete machines in 1924.

The following were the principal items of output of the firms whose main business consisted in the manufacture of electrical machinery :—

	1930 £'000	1924 £'000
Electrical machinery :—		
Generators ...	1,956	2,081
Motors ...	4,889	5,534
Converters and transformers ...	2,593	2,391
Control and switch gear ...	5,821	3,335
Switchboards ...	1,788	1,475
Other electrical machinery ...	770	1,299
Parts of electrical machinery sold separately ...	817	*
	18,634	16,115
Other electrical goods and apparatus ...	2,762	1,997
Other products ...	2,401	575
Contract, repair and maintenance work	1,111	555
	24,908	19,242
Less balance of work in progress at the beginning of the year ...	111	†
TOTAL ...	24,797	19,242

* Not separately recorded.
 † Not ascertained.

Of the total value of electrical machinery and parts manufactured in 1930 (£21,164,000), the output of the firms above-mentioned represented about 88 per cent. The corresponding proportion for 1924 was 92 per cent.

Capacity of electrical machinery.—At the 1930 Census, manufacturers of electrical machinery were asked to state voluntarily the capacity of the different classes of electric generators and motors constructed by them in the year and the following table summarises the information received :—

Kind of machinery	Total number recorded	Machinery of which capacity was shown	
		Number	Capacity
Generators :—	No.	No.	Kw.
Alternating current :—			
Under 2,000 kilowatts ...	1,669	1,561	101,801
2,000 kilowatts and under 11,000 kilowatts	98	98	554,674
11,000 kilowatts and over ...	41	40	754,050
Direct current ...	7,970	6,464	129,379
Motors :—			H.P.
Railway and tramway ...	3,290	3,283	284,793
Other motors of 1 horse-power and over :—			
Alternating current :			
1 horse-power and under 200 horse-power	91,312	84,519	911,867
200 horse-power and under 1,000 horse-power ...	709	472	161,112
1,000 horse-power and over ...	18	18	397,720
Direct current ...	32,424	22,111	318,518
Converters and transformers :—			Kw.
Rotary (including rectifiers) ...	2,780	1,896	284,476
Static ...	28,560	20,691	4,739,754

* Kilovolt-ampères.

(2) **Electric wires and cables.**—The following table shows the value of the principal classes of insulated wires and cables made in 1930 and 1924 :—

Electric wires and cables, insulated	1930				1924
	Returned by				Total
	Firms mainly makers of Electric Wires and Cables		All firms in the Electrical Engineering Trade*		
	Value	Entries	Value	Entries	Value
Telegraph and telephone (including submarine)	£'000 3,425	No. 20	£'000 4,402	No. 23	£'000 6,376
Other wires and cables :—					
Rubber insulation ...	4,639	32	4,639	32	3,714
Other insulation ...	9,719	30	10,116	32	8,570
TOTAL	17,783	...	19,157	...	18,660

* No output was recorded for 1930 on schedules for other trades.

Nearly 93 per cent. of the total value of insulated wires and cables produced in 1930 was recorded on returns received from firms whose business consisted chiefly in the manufacture of these goods. For 1924 the corresponding proportion was nearly 99 per cent. The following were the principal items of output recorded by these firms:—

	1930	1924
	£'000	£'000
Insulated wires and cables	17,783	18,427
Other electrical goods and apparatus	4,860	2,754
Other products	576	1,650
Contract, repair and maintenance work	1,739	1,266
	24,958	24,097
Less balance of work in progress at the beginning of the year	334	*
TOTAL	24,624	24,097

* Not ascertained.

Wire drawn.—The total quantity of uninsulated wire drawn in 1930 by firms that made returns on schedules for the Electrical Engineering Trade was 50,700 tons of copper wire and 70 tons of wire of copper alloys other than brass, these amounts being inclusive of the quantities insulated or used for other purposes by the firms that drew the wire as well as the quantities sold (or added to stock) as uninsulated wire. Practically the whole of this wire was drawn by the firms in this group. Corresponding particulars are not available for 1924.

(3) **Telegraph and telephone apparatus.**—The following table shows the values of telegraph and telephone apparatus made in 1930 and 1924:—

Kind of goods	1930						1924
	Returned by						
	Firms mainly makers of Telegraph and Telephone Apparatus		All firms in the Electrical Engineering Trade		Firms in all trades		
	Value	Ent-ries	Value	Ent-ries	Value	Ent-ries	
Telegraph apparatus	£'000 340	No. 8	£'000 407	No. 18	£'000 407	No. 18	£'000 275
Telephone apparatus	4,444	15	5,657	26	5,669	30	3,660
TOTAL	4,784	...	6,064	...	6,076	...	3,935

The principal items of output recorded for 1930 by the firms whose main business consisted in the manufacture of telegraph and telephone apparatus were as follows:—

	£'000
Telegraph and telephone apparatus	4,784
Other electrical goods and apparatus	2,494
Other products	101
Contract, repair and maintenance work	400
	7,779
Add balance of work in progress at the end of the year	197
TOTAL	7,976

About 79 per cent. of the total output of telegraph and telephone apparatus was made by the group of firms whose principal business consisted in the manufacture of these goods.

(4) **Wireless apparatus (except valves).**—The following table shows the values of the specified classes of wireless apparatus made in 1930 and 1924:—

Kind of goods	1930						1924
	Returned by						
	Firms mainly makers of Wireless Apparatus (except valves)		All firms in the Electrical Engineering Trade		Firms in all trades		
	Value	Ent-ries	Value	Ent-ries	Value	Ent-ries	
Transmitting sets	£'000 540	No. 4	£'000 746	No. 7	£'000 746	No. 7	4,835
Receiving sets	2,093	47	2,734	60	2,770	70	
Not separately distinguished	—	—	66	1	88	11	
Components and parts	2,420	69	3,207	95	3,266	112	
TOTAL	5,053	...	6,753	...	6,870	...	4,835

Firms that were mainly engaged in the manufacture of wireless apparatus recorded an aggregate output of these goods valued at £5,053,000, or nearly 74 per cent. of the total production returned

for 1930. Details of the principal items of output shown by this group of firms are given below :—

	£'000
Wireless apparatus (except valves)	5,053
Other electrical goods and apparatus	721
Other products, and work done	117
	5,891
Less balance of work in progress at the beginning of the year	21
TOTAL	5,870

(5) **Wireless valves and electric lamps.**—The following table shows the quantities (so far as recorded) and values of wireless valves and electric lamps made in 1930 and 1924 :—

Kind of goods	1930						1924	
	Returned on schedules for						Total	
	The Electrical Engineering Trade			All trades				
	Quantity	Value	Ent-ries	Quantity	Value	Ent-ries	Quantity	Value
Wireless valves ...	Thous. 5,625	£'000 1,516	No. 9	Thous. 5,625	£'000 1,516	No. 9	Thous. ...	£'000 1,508
Electric lamps and parts thereof:—								
Electric glow lamps:—								
20 volts and over—								
Gas filled ...	25,353	1,473	8	25,620	1,487	9	} 36,140*	2,485*
Other ...	19,500	809	16	19,670	816	17		
Under 20 volts	10,335	294	12	10,335	294	12		
Arc lamps, search-lights, projection lamps and parts thereof ...	...	43	8	...	51	9	...	23
TOTAL ... ..	...	4,135	...	...	4,164	...	...	4,016

* Of which 10,140,000 lamps, valued at £1,036,000, were gas-filled, and 26,000,000, valued at £1,449,000, were of other kinds.

The principal items of output recorded for 1930 by firms whose main business consisted in the manufacture of wireless valves and electric lamps were as follows :—

	Thous.	£'000
Wireless valves	4,511	1,056
Electric glow lamps :—		
20 volts and over :—		
Gas filled	13,991	791
Other	14,006	567
Under 20 volts	7,321	165
Total—Electric glow lamps ...	35,318	1,523
Other electrical goods and apparatus ... ..	...	245
	2,824	
Add balance of work in progress at the end of the year ... ..	...	5
TOTAL	2,829	

About 70 per cent. of the total output of wireless valves and 59 per cent. of that of electric glow lamps were made by the group of firms mainly engaged in this branch of the electrical trade.

(6) **Primary batteries and accumulators.**—The following table shows the values of the specified classes of batteries and accumulators made in 1930 and 1924 :—

Kind of goods	1930						1924
	Returned by						Total
	Firms mainly makers of Primary Batteries and Accumulators		All firms in the Electrical Engineering Trade		Firms in all trades		
	Value	Ent-ries	Value	Ent-ries	Value	Ent-ries	Value
Batteries, primary :—	£'000	No.	£'000	No.	£'000	No.	£'000
For hand flash lamps ...	686	10	698	15	698	15	41
Other primary batteries and parts thereof	1,683	16	2,017	25	2,019	26	389
Not separately distinguished	—	—	—	—	—	—	332
Accumulators (including parts) :—							
Portable :—							
For vehicles, sold separately	1,398	17	1,420	22	1,420	22	349
Other	1,278	19	1,298	24	1,298	24	1,547
Not separately distinguished	50	2	50	2	64	3	281
Stationary	867	13	879	14	879	14	1,314
TOTAL	5,962	...	6,362	...	6,378	...	4,253

Firms whose principal business consisted in the manufacture of primary batteries and accumulators recorded about 93 per cent. of the total output shown above for 1930. Details of the principal classes of goods made and work done by these firms are given below :—

	£'000
Primary batteries and accumulators	5,962
Other electrical goods and apparatus	498
Other products, and work done	127
	6,587
Less balance of work in progress at the beginning of the year	99
TOTAL	6,488

(7) **Electric lighting accessories and fittings.**—The following table shows the value of the output of the specified kinds of electrical accessories and fittings in 1930 and 1924 :—

Electric lighting accessories and fittings and electric bell apparatus, not elsewhere specified, for indoor and outdoor use	1930						1924
	Returned by						Total
	Firms mainly makers of Electric Lighting Accessories and Fittings		All firms in the Electrical Engineering Trade		Firms in all trades		
	Value	Ent-ries	Value	Ent-ries	Value	Ent-ries	Value
Accessories (i.e. lampholders, ceiling roses, wall plugs and sockets, switches, fuses, etc.)	£'000	No.	£'000	No.	£'000	No.	1,616
Fittings (ceiling, wall, standard, portable or pendant) excluding glassware	1,060	28	1,482	51	1,488	54	
	367	23	665	33	669	36	
TOTAL	1,427	...	2,147	...	2,157	...	1,616

These figures do not include electric lighting accessories and fittings made by firms in the Finished Brass Trade (see page 463) and it is probable that some further output by firms in other trades (e.g., Mechanical Engineering; Hardware, Hollow-ware, etc.) is excluded through lack of precise description.

Firms that were chiefly engaged in the manufacture of electric lighting accessories and fittings recorded about two-thirds of the total output shown above for 1930. The principal items composing the output of these firms were as follows :—

Electric lighting accessories and fittings	£'000	1,427
Other electrical goods and apparatus	72	
Other products, and work done	193	
	1,692	
Less balance of work in progress at the beginning of the year	3	
TOTAL	1,689	

(8) **Other electrical appliances, apparatus and parts thereof.**—The following table gives particulars of the output in 1930 and 1924 of electrical apparatus and plant not dealt with in the preceding sections :—

Kind of goods	1930				1924
	Returned on schedules for				Total
	The Electrical Engineering Trade		All trades		
	Value	Ent-ries	Value	Ent-ries	Value
	£'000	No.	£'000	No.	£'000
Electric carbons (lighting, furnace, etc.)	570	7	572	8	564
Electrical conduits and fittings therefor	914	19	926	22	439*
Condensers, electric, and parts thereof	344	7	344	7	393
Electricity meters :—					
House service meters, complete (Thousand)	1,671 (786)	12	1,683 (792)	14	985 (502)
Switchboard meters	45	8	45	8	65
Other meters and parts	96	12	96	12	30
Commercial measuring instruments (including parts) :—					
Indicating	604	25	604	25	481
Recording	98	10	98	10	72
Other	94	6	94	6	88
Electro-medical apparatus, other than X-ray apparatus	51	16	77	19	66
X-ray apparatus :—					
X-ray tubes	9	4	9	4	154
Other	128	8	130	9	
Scientific electrical instruments, unclassified	171	11	326	25	319
Electric heating apparatus :—					
Domestic	806	32	829	36	285
Commercial	92	13	92	13	
Industrial	163	18	165	20	
Not separately distinguished	—	—	—	—	55
Electric cooking apparatus	430	19	440	22	149
Electric heating and cooking apparatus, not separately distinguished	—	—	—	—	56

Kind of goods	1930				1924	
	Returned on schedules for				Total	
	The Electrical Engineering Trade		All trades			
	Value	Entries	Value	Entries	Value	
£'000	No.	£'000	No.	£'000		
Electric signs (including luminous tube signs)*	158	13	165	16	} 2,759	
Joint boxes (including some jointing materials)*	750	8	752	9		
Electric fans (including ceiling fans)*	89	6	89	6		
Signalling gear and instruments (including automatic traffic signals)*	180	10	186	11		
Fittings for overhead transmission lines*	459	7	459	7		
Electric torches, safety fuses and parts*	132	5	142	7		
Totalisator apparatus*	303	5	304	6		
Portable electric tools*	109	7	109	7		
Electrical apparatus, not elsewhere specified	1,244	...	1,466	...		
Parts and accessories of electrical apparatus, not elsewhere specified	285	...	315	...		
Insulating materials of mica, ebonite, moulded compositions, etc. (sold separately)	1,164	47	1,297	55		923*
TOTAL—Other electrical appliances, apparatus and parts thereof ...	11,159	...	11,814	...		7,900

* So far as separately recorded.

Production, exports and imports.—The following table shows, in relation to production, the values of the specified classes of electrical machinery and apparatus exported in 1930 and 1924 together with the value of similar goods imported and retained. Parts of electrical machinery, sold as such, were recorded as a separate category in the production returns for 1930 but were included with complete machines in the export and import returns under the various appropriate headings. The figures of production for 1930 are limited to firms employing more than ten persons while those for 1924 relate to all firms.

The production figures represent values "at factory", exports are stated f.o.b. and retained imports c.i.f. and these different bases of valuation should be borne in mind in comparing the figures given under these headings.

Kind of goods	Production	Exports	Retained imports
	£'000	£'000	£'000
Electrical machinery :—			
Generators :—			
Alternating current ... { 1930 1,408 876 18			
... { 1924 1,227 708 55			
Direct current ... { 1930 558 303 18			
... { 1924 684 545 27			
Not separately distinguished 1924 427 — —			
TOTAL—Generators ... { 1930 1,966 1,179 36			
... { 1924 2,338 1,253 82			
Motors :—			
Railway and tramway ... { 1930 682 182 *			
... { 1924 1,555 578 1			
Other :—			
Alternating current ... { 1930 2,445 719 158			
... { 1924 2,196 569 65			
Direct current ... { 1930 1,494 376 204			
... { 1924 1,663 500 135			
Not separately distinguished { 1930 331 — —			
... { 1924 245 — —			
TOTAL—Motors ... { 1930 4,952 1,277 362			
... { 1924 5,659 1,647 201			
Converters and transformers :—			
Rotary ... { 1930 513 180 10			
... { 1924 895 268 46			
Static ... { 1930 2,488 742 31			
... { 1924 1,757 431 41			
Not separately distinguished 1924 66 — —			
TOTAL—Converters and transformers ... { 1930 3,001 922 41			
... { 1924 2,718 699 87			
Control and switch gear ... { 1930 6,162 1,950 38			
... { 1924 3,675 945 25			
Switchboards (other than telegraph and telephone) ... { 1930 1,839 89 1			
... { 1924 1,679 91 †			
Other electrical machinery, including motor generators, ignition magnetos, electric vacuum cleaners, etc. ... { 1930 1,860 1,017‡ 1,201‡			
... { 1924 1,731 810‡ 589‡			
Parts of electrical machinery (sold separately) ... 1930 1,384 § §			
TOTAL—Electrical machinery and parts ... { 1930 21,164 6,434 1,679			
... { 1924 17,800 5,444 984			

Kind of goods	Production	Exports	Retained imports
	£'000	£'000	£'000
Electric wires and cables, insulated :—			
Telegraph and telephone (in-cluding submarine) ...	{ 1930 4,402 1924 6,377	{ 1930 1,631 1924 1,970	{ 1930 32 1924 118
Other wires and cables :—			
Rubber insulation ...	{ 1930 4,639 1924 3,716	{ 1930 1,234 1924 1,323	{ 1930 224 1924 212
Other insulation ...	{ 1930 10,116 1924 8,570	{ 1930 1,681 1924 1,184	{ 1930 701 1924 240
TOTAL—Wires and cables	{ 1930 19,157 1924 18,663	{ 1930 4,546 1924 4,477	{ 1930 957 1924 570
Telegraph and telephone apparatus 1930	6,076	1,551	162
Wireless apparatus (except valves) 1930	6,870	851	818
TOTAL—Telegraph, tele- phone and wireless apparatus (except valves) ...	{ 1930 12,946 1924 9,059	{ 1930 2,402 1924 2,659	{ 1930 980 1924 817
Wireless valves ...	{ 1930 1,516 1924 (5,625,000) 1,512	{ 1930 312 1924 (639,000) 176||	{ 1930 159 1924 (1,646,000) 98||
Electric lamps and parts thereof :—			
Electric glow lamps :—			
20 volts and over :—			
Gas filled ...	{ 1930 1,487 (25,353,000)	{ 1930 312 (3,774,000)	{ 1930 255 (3,972,000)
Other ...	{ 1930 816 (19,500,000)	{ 1930 253 (5,440,000)	{ 1930 207 (8,743,000)
Under 20 volts ...	{ 1930 294 (10,335,000)	{ 1930 24 (903,000)	{ 1930 90 (29,332,000)
TOTAL—Electric glow lamps ...	{ 1930 2,597 (55,188,000) 1924 2,486 (36,140,000)	{ 1930 589 (10,017,000) 1924 341 (5,148,000)	{ 1930 552 (42,047,000) 1924 207 (13,178,000)
Arc lamps, searchlights, pro- jection lamps and parts thereof ...	{ 1930 51 1924 26	{ 1930 21 1924 11	{ 1930 31 1924 13
Batteries, primary :—			
For hand flash lamps ...	{ 1930 698	{ 1930 12	{ 1930 130
Other primary batteries ...	{ 1930 2,019¶	{ 1930 151	{ 1930 557
TOTAL—Primary batteries	{ 1930 2,717¶ 1924 768¶	{ 1930 163 1924 125	{ 1930 687 1924 317

Kind of goods	Production	Exports	Retained imports
	£'000	£'000	£'000
Accumulators (including parts) :—			
Portable ...	{ 1930 2,782 1924 2,210	{ 1930 363 1924 210	{ 1930 40 1924 42
Stationary ...	{ 1930 879 1924 1,320	{ 1930 365 1924 407	{ 1930 17 1924 14
TOTAL—Accumulators and parts ...	{ 1930 3,661 1924 3,530	{ 1930 728 1924 617	{ 1930 57 1924 56
Electric lighting accessories and fittings and electric bell apparatus, not elsewhere specified, for indoor and outdoor use ...	{ 1930 2,157 1924 2,206	{ 1930 607 1924 611	{ 1930 505 1924 258
Electric carbons ...	{ 1930 572 1924 569	{ 1930 13 1924 27	{ 1930 190 1924 117
House service meters, complete ...	{ 1930 1,683 (792,000) 1924 985 (502,000)	{ 1930 110 (84,000) 1924 170 (126,000)	{ 1930 141 (117,000) 1924 41 (40,000)
Electro-medical apparatus other than X-ray apparatus ...	{ 1930 77 1924 67	{ 1930 31 1924 18	{ 1930 35 1924 13

* Less than £500.
 † Re-exports £1,252 in excess of imports.
 ‡ The export and import figures do not include magnetos for motor vehicles.
 § Included with complete machines.
 || Including X-ray tubes and vacuum tubes.
 ¶ Including parts.

Volume of production in 1930 and 1924.—Apart from some minor exceptions, no quantitative particulars are available for the year 1924 in respect of any class of electrical engineering product, and there is no satisfactory basis by reference to which the volume of production in that year can be compared with that of 1930. Some guide to the respective values of the various classes of electrical machinery manufactured is provided by the figures of exports of such goods as were recorded in terms of quantity in both years. For the remaining products and work done it is possible to base a rough estimate on the price movement of the principal materials used and the average wage costs. On the basis of the average values of electrical machinery exported, the recorded output of such machinery in 1924 (£17,617,000) would be reduced to a figure of £15,400,000, while the use of the data referred to in respect of the remaining products of the trade would yield a figure of about £48,200,000 in place of the total of £49,881,000 actually recorded. These estimates indicate that the total value of electrical engineering products in 1924, if re-valued in terms of 1930 prices, would amount to approximately £63,000,000, and that the volume of production in 1930 exceeded

that in 1924 by about 33 per cent. It may be noted in this connection that the recorded figures of employment in the trade indicate an increase of nearly 28 per cent. in the later year.

Contract work.—The following particulars of work of construction or installation were recorded by electrical engineering firms for 1930 and 1924. The amounts shown are exclusive of the value of plant and fittings made by the firms carrying out the work, these values being included in those shown in previous tables for the goods concerned.

Kind of work	1930	1924
	£'000	£'000
Installation and erection of generating plant and appliances	715	} 2,524
Electric power and lighting lines or works	3,416	
Telegraph and telephone wires and cables	292	270
Installation of wireless telegraph and telephone apparatus and appliances	32	107
Installation of other telegraph and telephone apparatus, test boards, switchboards, etc.	239	138
TOTAL	4,694†	3,039

† Including £8,000 returned on schedules for other trades.

Contracting firms not engaged in manufacture made their returns on schedules for the Building and Contracting Trade in 1930 but the practice was not uniform in 1924 and the figures for that year are accordingly slightly overstated in relation to those for 1930. Work of the above description is also carried out on a large scale by labour employed directly by Electricity Supply Undertakings and by the General Post Office: work done by these and similar undertakings is dealt with in a separate volume.

Repair, maintenance and other work.—The total value recorded under this heading for 1930 was £1,577,000 (including £72,000 returned on schedules for other trades) and £1,627,000 for 1924 (including £41,000 returned on schedules for other trades).

Work in progress.—The aggregate value of the work in progress at the beginning of 1930 was returned as £10,820,000 and that at the end of 1930 at £10,579,000; the difference of £241,000 should accordingly be deducted from the gross value of the completed output. Information regarding the value of work in progress was not obtained at the 1924 Census.

Other products.—In addition to the output dealt with in the preceding sections of this report, the following goods were produced in 1930 and 1924 by firms that made their returns on schedules for the Electrical Engineering 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
Mechanical plant (steam turbines, condensing plant, etc.)	2,161	714
Iron and steel castings	108	47
Other manufactures of iron and steel	182	70
Uninsulated copper wire	1,833	1,218*
Other metal manufactures	484	268
Scientific instruments (other than electrical)	89	} 1,250
Other goods made	300	
TOTAL	5,157	3,567

* So far as separately recorded.

Waste products sold.—The following sales of manufacturers' scrap were recorded by firms in the Electrical Engineering Trade in 1930 and 1924:—

Scrap of—	1930	1924
	£'000	£'000
Iron and steel	64	10
Copper	177	} 47
Other metals	137	
TOTAL	378	57

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
1930						
Operatives (average for the year)	16,351	103,367	13,494	48,370	29,845	151,787
Administrative, technical and clerical staff (as at 18th October)	2,365	28,089	2,412	12,144	4,777	40,233
TOTAL	18,716	131,456	15,906	60,514	34,622	191,970
1924						
Operatives (average for the year)	16,437	86,825	11,470	34,329	27,907	121,154
Administrative, technical and clerical staff (as at 18th October)	2,109	20,506	1,746	8,950	3,855	29,456
TOTAL	18,546	107,331	13,216	43,279	31,762	150,610

Wages.—The available information as to the amount of wages paid in 1930 and 1924 is given on pages 212-3.

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
PRIME MOVERS	H.P.	H.P.	H.P.	H.P.	H.P.	H.P.
Reciprocating steam engines	4,833	3,489	8,322	7,469	7,077	14,546
Steam turbines	11,375	7,200	18,575	21,910	2,385	24,295
Internal combustion engines :—						
Gas	1,242	1,632	2,874	5,398	986	6,384
Petrol, kerosene, or other light oils	30	18	48	357	193	550
Heavy oils	3,381	660	4,041	1,464	550	2,014
Water engines	138	—	138	156	—	156
TOTAL	20,999	12,999	33,998	36,754	11,191	47,945
ELECTRIC GENERATORS	Kw.	Kw.	Kw.	Kw.	Kw.	Kw.
Driven by						
Reciprocating steam engines	2,068	2,368	4,436	3,913	4,861	8,774
Steam turbines	8,336	5,350	13,686	15,894	1,984	17,878
Internal combustion engines :—						
Gas	569	912	1,481	3,034	615	3,649
Petrol, kerosene or other light oils	3	7	10	118	96	214
Heavy oils	2,041	428	2,469	875	375	1,250
Water engines	105	—	105	100	50	150
TOTAL	13,122	9,065	22,187	23,934	7,981	31,915
ELECTRIC MOTORS	H.P.	H.P.	H.P.	H.P.	H.P.	H.P.
Driven by						
Electricity generated in same works	32,342	774	33,116	44,567	2,599	47,166
Electricity generated in other works under same ownership	971	240	1,211	—	—	—
Purchased electricity	202,732	13,200	215,932	100,956	12,244	113,200
TOTAL	236,045	14,214	250,259	145,523	14,843	160,366

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	73,105	241,349*
Coke	—	53,640*
Electricity used for all purposes :—		B.T.U. (Kw.-hrs.) '000
Generated in same works		28,152
Generated in other works under same ownership		953
Purchased		188,584
TOTAL—Electricity		217,689

* These figures were recorded by firms representing 98·8 per cent. of the net output of the whole trade.

TABLES

I. Summary of results

Particulars	Unit	England and Wales	Scotland	Great Britain
Value of goods made and work done (Gross output)	£'000	86,687	987	87,674
Cost of materials used	"	41,956	557	42,513
Paid for work given out to other firms... ..	"	324	4	328
Net output	"	44,407	426	44,833
Average number of persons employed... ..	No.	189,585	2,385	191,970
Net output per person employed	£	234	179	234
Power available :—				
Prime movers	H.P.	33,548	450	33,998
Electric motors driven by purchased electricity	"	211,992	3,940	215,932

II. Production

Goods sold or added to stock and work done	England and Wales	Scotland	Great Britain
	Value	Value	Value
	£'000	£'000	£'000
Electrical machinery and parts :—			
Generators :—			
Alternating current :—			
Under 2,000 kw.	*	*	392
2,000 kw. and under 11,000 kw.	401	—	401
11,000 kw. and over	614	—	614
Direct current	*	*	553
Total—Generators	1,939	21	1,960
Motors :—			
Railway and tramway	682	—	682
Other motors of 1 h.p. and over :—			
Alternating current :—			
1 h.p. and under 200 h.p.	*	*	2,046
200 h.p. and under 1,000 h.p.	*	*	350
1,000 h.p. and over	41	—	41
Direct current	*	*	1,452
Fractional horse-power motors (i.e. below 1 h.p.)	331	—	331
Total—Motors	4,775	127	4,902
Converters and transformers :—			
Rotary (including rectifiers)	*	*	513
Static	*	*	2,488
Total—Converters and transformers	*	*	3,001

Goods sold or added to stock and work done	England and Wales	Scotland	Great Britain
	Value	Value	Value
	£'000	£'000	£'000
Electrical machinery and parts— <i>contd.</i> :—			
Control and switch gear	*	*	6,060
Switchboards (other than telegraph and telephone)	1,832	5	1,837
Vacuum cleaners, electrically worked	524	—	524
Other electrical machinery (including motor generators, ignition magnetos, etc.)	*	*	848
Parts of electrical machinery, sold separately	*	*	1,280
TOTAL—Electrical machinery and parts	20,070	342	20,412
Electric wires and cables, insulated :—			
Telegraph and telephone (including submarine)	4,402	—	4,402
Other wires and cables :—			
Rubber insulation	*	*	4,639
Other insulation	*	*	10,116
Total—Electric wires and cables	*	*	19,157
Telegraph apparatus	407	—	407
Telephone apparatus	5,657	—	5,657
Wireless apparatus (except valves) :—			
Transmitting sets	746	—	746
Receiving sets	2,734	—	2,734
Not separately distinguished	66	—	66
Components and parts	3,207	—	3,207
Wireless valves	1,516	—	1,516
Electric lamps and parts thereof :—			
Electric glow lamps :—			
20 volts and over :—			
Gas filled	1,473	—	1,473
Other	809	—	809
Under 20 volts	294	—	294
Arc lamps, searchlights, projection lamps and parts thereof	43	—	43
Total—Electric lamps and parts	2,619	—	2,619
Batteries, primary :—			
For hand flash lamps	698	—	698
Other primary batteries and parts thereof	2,017	—	2,017
Total—Primary batteries	2,715	—	2,715
Accumulators (including parts) :—			
Portable :—			
For vehicles, sold separately	1,420	—	1,420
Other	1,298	—	1,298
Not separately distinguished	50	—	50
Stationary	879	—	879
Total—Accumulators and parts	3,647	—	3,647

Goods sold or added to stock and work done	England and Wales	Scotland	Great Britain
	Value	Value	Value
	£'000	£'000	£'000
Electric lighting accessories and fittings and electric bell apparatus, not elsewhere specified, for indoor or outdoor use:—			
Accessories (lampholders, ceiling roses, wall plugs and sockets, switches, fuses, etc.) ...	*	*	1,482
Fittings (ceiling, wall, standard, portable or pendant), excluding glassware ...	*	*	665
Electric carbons (lighting, furnace, etc.) ...	*	*	570
Electrical conduits and fittings therefor ...	*	*	914
Condensers, electric, and parts thereof ...	344	—	344
Electricity meters:—			
House service meters, complete ...	1,671	—	1,671
Switchboard meters ...	45	—	45
Other meters and parts ...	96	—	96
Commercial measuring instruments (including parts):—			
Indicating ...	604	—	604
Recording ...	98	—	98
Other ...	94	—	94
Electro-medical apparatus, other than X-ray apparatus ...	51	—	51
X-ray apparatus:—			
X-ray tubes ...	9	—	9
Other ...	128	—	128
Scientific electrical instruments, unclassified ...	171	—	171
Electric heating apparatus:—			
Domestic ...	*	*	806
Commercial ...	*	*	92
Industrial ...	*	*	163
Electric cooking apparatus ...	*	*	430
Other electrical apparatus, so far as recorded separately:—			
Electric signs (including luminous tube signs)	158	—	158
Joint boxes (including some jointing materials)	750	—	750
Electric fans (including ceiling fans) ...	89	—	89
Signalling gear and instruments (including automatic traffic signals) ...	180	—	180
Fittings for overhead transmission lines ...	*	*	459
Electric torches, safety fuses and parts ...	132	—	132
Totalisator apparatus ...	303	—	303
Portable electric tools ...	109	—	109
Electrical apparatus, not elsewhere specified ...	1,243	1	1,244
Parts and accessories of electrical apparatus, not elsewhere specified ...	285	—	285
Insulating materials of mica, ebonite, moulded compositions, etc., sold separately ...	1,164	—	1,164
TOTAL—Electrical wires and cables, lamps, batteries and other apparatus and parts	55,437	340	55,777

Goods sold or added to stock and work done	England and Wales	Scotland	Great Britain
	Value	Value	Value
	£'000	£'000	£'000
Mechanical plant (steam turbines, condensing plant, etc.) ...	2,160	1	2,161
Iron and steel castings ...	108	—	108
Other manufactures of iron and steel ...	182	—	182
Uninsulated copper wire ...	1,833	—	1,833
Other metal manufactures ...	484	—	484
Scientific instruments (other than electrical) ...	89	—	89
Other goods made ...	289	11	300
Scrap metals sold:—			
Iron and steel ...	62	2	64
Copper ...	176	1	177
Other metals ...	136	1	137
TOTAL VALUE OF GOODS MADE ...	81,026	698	81,724
	Amount received	Amount received	Amount received
	£'000	£'000	£'000
Contract and other work done:—			
Installation and erection of generating plant and appliances ...	696	15	711
Electric power and lighting lines or works ...	3,318	94	3,412
Telegraph and telephone wires and cables ...	*	*	292
Installation of wireless telegraph and telephone apparatus and appliances ...	*	*	32
Telephone apparatus, testboards, switchboards, etc. ...	*	*	239
Repair, maintenance and other work done ...	1,318	187	1,505
TOTAL VALUE OF WORK DONE... ..	5,891	300	6,191
TOTAL	86,917	998	87,915
Plus Value of work in progress at the end of 1930 ...	10,504	75	10,579
Less Value of work in progress at the beginning of 1930 ...	10,734	86	10,820
TOTAL VALUE OF GOODS MADE AND WORK DONE (GROSS OUTPUT) ...	86,687	987	87,674

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

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
	<i>England and Wales</i> :—					
Operatives	16,406	104,033	13,762	49,266	30,168	153,299
Administrative, etc.*	2,334	27,764	2,374	11,986	4,708	39,750
TOTAL	18,740	131,797	16,136	61,252	34,876	193,049
<i>Scotland</i> :—						
Operatives	309	1,632	32	180	341	1,812
Administrative, etc.*	31	325	38	158	69	483
TOTAL	340	1,957	70	338	410	2,295
<i>Great Britain</i> :—						
Operatives	16,715	105,665	13,794	49,446	30,509	155,111
Administrative, etc.*	2,365	28,089	2,412	12,144	4,777	40,233
TOTAL	19,080	133,754	16,206	61,590	35,286	195,344

* Administrative, technical and clerical staff.

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

Week ended	Males and females			Week ended	Males and females		
	England and Wales	Scotland	Great Britain		England and Wales	Scotland	Great Britain
Jan. 18 ...	152,944	1,938	154,882	July 19 ...	147,005	1,862	148,867
Feb. 15 ...	150,536	1,881	152,417	Aug. 16 ...	146,790	1,890	148,680
Mar. 15 ...	147,828	1,964	149,792	Sept. 13 ...	149,168	1,870	151,038
Apl. 12 ...	147,753	2,058	149,811	Oct. 18 ...	153,299	1,812	155,111
May 17 ...	146,973	1,935	148,908	Nov. 15 ...	155,016	1,873	156,889
June 21 ...	147,566	1,846	149,412	Dec. 13 ...	153,136	1,895	155,031
AVERAGE FOR THE TWELVE MONTHS ...					149,835	1,902	151,737

IV. Power

PARTICULARS OF PRIME MOVERS, ELECTRIC GENERATORS AND ELECTRIC MOTORS

Power equipment	England and Wales		Scotland		Great Britain	
	Ordinarily in use	In reserve or idle	Ordinarily in use	In reserve or idle	Ordinarily in use	In reserve or idle
PRIME MOVERS	H.P.	H.P.	H.P.	H.P.	H.P.	H.P.
Reciprocating steam engines	4,383	3,489	450	—	4,833	3,489
Steam turbines	11,375	7,200	—	—	11,375	7,200
Internal combustion engines :—						
Gas	1,242	1,632	—	—	1,242	1,632
Petrol, kerosene or other light oils	30	18	—	—	30	18
Heavy oils	3,381	660	—	—	3,381	660
Water engines	138	—	—	—	138	—
TOTAL	20,549	12,999	450	—	20,999	12,999
TOTAL OF PRIME MOVERS INSTALLED	33,548		450		33,998	
ELECTRIC GENERATORS	Kw.	Kw.	Kw.	Kw.	Kw.	Kw.
Driven by						
Reciprocating steam engines	1,768	2,368	300	—	2,068	2,368
Steam turbines	8,336	5,350	—	—	8,336	5,350
Internal combustion engines :—						
Gas	569	912	—	—	569	912
Petrol, kerosene or other light oils	3	7	—	—	3	7
Heavy oils	2,041	428	—	—	2,041	428
Water engines	105	—	—	—	105	—
TOTAL	12,822	9,065	300	—	13,122	9,065
TOTAL OF ELECTRIC GENERATORS INSTALLED	21,887		300		22,187	
ELECTRIC MOTORS	H.P.	H.P.	H.P.	H.P.	H.P.	H.P.
Driven by						
Electricity generated in same works	32,042	724	300	50	32,342	774
Electricity generated in other works under same ownership	90	240	881	—	971	240
Purchased electricity	199,245	12,747	3,487	453	202,732	13,200
TOTAL	231,377	13,711	4,668	503	236,045	14,214
TOTAL OF ELECTRIC MOTORS INSTALLED	245,088		5,171		250,259	

V. Consumption of fuel

Kind of fuel used	England and Wales	Scotland	Great Britain
Coal used for power	Tons 73,095	Tons 10	Tons 73,105
Coke used for power	—	—	—
Electricity used for all purposes :—	B.T.U. (Kw.-hrs.) '000	B.T.U. (Kw.-hrs.) '000	B.T.U. (Kw.-hrs.) '000
Generated in same works	28,144	8	28,152
Generated in other works under same ownership	322	631	953
Purchased	186,283	2,301	188,584
TOTAL—Electricity	214,749	2,940	217,689