

71 Electrical machinery

This Report on the Electrical Machinery Industry relates to establishments engaged wholly or mainly in manufacturing machinery for generating, transmitting and distributing electric power including electricity generators, turbines for electricity generation and transformers; starting and controlling gear for electric motors, and switchgear; electric motors including electric traction motors and transmission equipment and associated rectifiers and electrical machinery not reported elsewhere. Electrical equipment for motor vehicles, cycles and aircraft is excluded.

This industry corresponds to minimum list heading 361 in the Standard Industrial Classification (Revised 1968) which has been used for the first time as a basis of classification in the 1968 Census.

The industry corresponds to the Electrical Machinery Industry (Part 55) in the Reports on the last detailed Census of Production for 1963, except that turbines for generating electricity included in the 1963 report on Industrial Engines (Part 44) are now included in this industry and electricity meters formerly included in this industry are now included in the Report on the Scientific and Industrial Instruments and Systems Industry (Part 70).

Throughout this Report, the figures given for 1963 have been reclassified, as far as possible, according to the Standard Industrial Classification (Revised 1968) so that data for 1963 and 1968 are on the same industrial basis. However the reclassification of small firms, which provided limited information only, has been arbitrary.

In interpreting the data in the tables it is essential to bear in mind the notes and definitions which appear on pages (i) to (iv).

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(c) Including services rendered to other organisations (amounts charged for hiring out plant, machinery or other goods, for providing transport, or for technical or other services rendered).

(d) Administrative, technical and clerical employees.

(e) Excluding expenditure for establishments not yet in production.

(f) Acquisitions less disposals.TABLE 1 Industry summary, 1963 and 1968
United Kingdom (a) (b)

	Unit	All establishments		
		1963	1968	
Number of enterprises	No.	618	567	
Number of establishments	"	785	763	
Gross output	£'000	486,026	579,369	
Net output	"	245,387	312,850	
Net output per head	£	1,115	1,866	
Sales and work done	£'000	goods produced and work done (c)	449,212	537,294
		merchanted goods and canteen takings	38,594	45,919
Purchases	"	materials for use in production and packaging and fuel	194,697	208,306
		goods for merchandising and canteen purchases	32,352	39,313
Payments to other organisations	"	for work done on materials given out for transport	8,494	10,750
		by road	3,801	3,690
		by rail and other means excluding postal services			822
Stocks and work in progress	"	change during year	- 3,074	- 7,484
		at end of year	191,065	232,516
Goods on hand for sale	"	change during year	+ 1,893	- 1,450
		at end of year	16,615	11,666
Work in progress	"	change during year	- 3,672	- 2,394
		at end of year	131,100	165,189
Materials, stores and fuel	"	change during year	- 1,295	- 3,640
		at end of year	43,351	55,661
Number employed on average during the year	Th.	total, including working proprietors	220.1	167.7
		operatives	144.6	106.0
		other employees (d)	74.9	61.1
Wages and salaries	£'000	of operatives	99,890	98,505
		of other employees (d)	68,281	74,351
Capital expenditure (e)	"	12,970	14,171	
Total	"	4,017	2,906	
New building work	"	- 446	- 321	
Land and existing buildings (f)	"	8,554	10,547	
Plant and machinery (f)	"	845	1,040	
Vehicles (f)	"			

(a) For 1968, estimates for establishments not making satisfactory returns and for small establishments, from which only employment data were collected, accounted for 3 per cent. of the total figures in which they were incorporated: of this, unsatisfactory returns accounted for 1 per cent. For 1963 the comparable figures were 2 per cent. and less than 1 per cent. respectively.

(b) The following information relates to small establishments (employing fewer than 25 persons) in this industry. It includes an estimate for small establishments not making satisfactory returns.

	1963	1968
Number of establishments	388	364
Average number employed:		
Working proprietors	543	362
Other persons employed	3,473	3,526

Footnotes continued on page 71/2.

TABLE 2 Analysis by size of establishment within the industry, 1968

(i) Output and employment

All establishments: United Kingdom

Number employed on average during the year by the establishment (a)	Estab-lish-ments	Enter-prises (b)	Total number employed on average during the year (a)	Gross output	Net output	Net output per head
1-5	79	79	254	..	..	..
6-10	77	76	602	..	..	..
11-24	149	144	2,625	..	..	..
25-49	81	69	3,059	8,909	4,552	1,488
50-99	82	73	6,147	18,278	9,638	1,568
100-199	72	61	10,424	36,099	18,342	1,760
200-299	40	33	9,900	28,319	13,924	1,406
300-399	24	21	8,233	24,192	12,432	1,510
400-499	14	12	6,205	19,793	8,506	1,371
500-749	24	22	14,266	42,175	22,269	1,561
750-999	7	6	5,959	17,536	8,992	1,509
1,000-1,499	17	9	20,345	71,246	38,459	1,890
1,500-1,999	7	7	12,651	33,777	20,466	1,618
2,000-2,999	6	3	15,103	53,877	30,586	2,025
3,000-3,999	3	3	11,037	42,036	19,463	1,763
4,000 and over	6	3	39,432	166,436	96,194	2,440
Unsatisfactory returns	75	74	1,419	..	..	..
Total	763	567	167,661	579,369(c)	312,850(c)	1,866(c)

TABLE 2 (continued) (ii) Employees, wages and salaries

All establishments: United Kingdom

Number employed on average during the year by the establishment (a)	Employees		Wages and salaries		Wages and salaries per head	
	Oper-atives	Others (d)	Oper-atives	Others (d)	Oper-atives	Others (d)
	Number	Number	£'000	£'000	£	£
1-5	..	..	..	..	..	..
6-10	..	..	..	..	..	..
11-24	..	..	..	..	..	..
25-49	2,330	691	1,955	854	839	1,236
50-99	4,428	1,681	3,603	1,904	814	1,133
100-199	7,630	2,765	6,699	3,280	878	1,186
200-299	7,024	2,870	6,149	3,306	875	1,152
300-399	5,597	2,633	4,712	3,018	842	1,146
400-499	4,051	2,150	3,494	2,406	862	1,119
500-749	9,067	5,194	8,152	6,507	899	1,253
750-999	3,984	1,975	3,169	2,345	795	1,187
1,000-1,499	12,878	7,467	12,314	8,212	956	1,100
1,500-1,999	8,149	4,502	7,277	5,259	893	1,168
2,000-2,999	8,046	7,057	7,735	8,525	961	1,208
3,000-3,999	6,455	4,582	6,142	5,779	952	1,261
4,000 and over	23,497	15,934	24,429	20,985	1,040	1,317
Unsatisfactory returns	..	..	..	..	..	..
Total	106,041(c)	61,130(c)	98,505(c)	74,351(c)	929(c)	1,216(c)

(a) Including working proprietors.

(b) The sum of the figures for the size groups exceeds the total for the industry to the extent that enterprises made returns for establishments in more than one size group.

(c) Including estimates for establishments employing fewer than 25 persons and for establishments not making satisfactory returns.

(d) Administrative, technical and clerical employees.

TABLE 3 Percentage analysis of employees, by age and sex, 1969 (a)

All establishments: United Kingdom

Ages	Males	Females	All employees
	Per cent.	Per cent.	Per cent.
Under 18	3	1	4
18 and over	71	25	96
All ages	74	26	100

Source: Department of Employment

(a) The percentages relate to the numbers employed (excluding working proprietors) at June 1969, the earliest date for which the information is available on the basis of the Standard Industrial Classification, (Revised 1968).

Footnotes to Table 4.

- (a) Some establishments employing fewer than 25 persons were included in returns for larger establishments. These amounted to 18 establishments in 1968 and 13 in 1963.
- (b) Including services rendered to other organisations (amounts charged for hiring out plant, machinery or other goods, for providing transport, or for technical or other services rendered).
- (c) Direct sales of goods (excluding canteen takings) made to, and work done for, the general public by larger establishments are included. These amounted to £124,000 in 1968. Similar information is not available for 1963.
- (d) This is the ratio of total sales of principal products by the industry to total sales of goods produced and work done.
- (e) Progress payments received for work in progress in 1968 from United Kingdom customers were recorded as £81,397,000 at beginning of year and £74,687,000 at end of year; and from overseas customers £8,556,000 at beginning of year and £9,533,000 at end of year. Similar information is not available for 1963.
- (f) Administrative, technical and clerical employees.
- (g) Excluding expenditure for establishments not yet in production.

TABLE 4 Analysis of larger establishments, 1963 and 1968

Establishments employing 25 or more persons: Analysis of returns received, United Kingdom (a)

	Unit	1963	1968
Number of enterprises	No.	234	220
Number of establishments	"	393	401
Gross output	£'000	475,760	563,284
Net output	"	240,204	304,163
Net output per head	£	1,115	1,866
Sales and work done	{ goods produced and work done (b) (c) merchanted goods and canteen takings	£'000	£'000
		439,723	522,377
		37,779	44,644
Index of specialisation (d)	Per cent.	80	84
Purchases	{ materials for processing and packaging, and fuel goods for merchandising and canteen purchases	£'000	£'000
		190,585	202,522
		31,669	38,221
Payments to other organisations	{ for work done on materials given out for transport by road by rail and other means excluding postal services	"	"
		8,314	10,451
		3,721	3,587
			799
Stocks and work in progress			
Goods on hand for sale	{ change during year at end of year	"	"
		+ 1,853	- 1,410
		16,264	11,342
Work in progress (e)	{ change during year at end of year	"	"
		- 3,595	- 2,327
		128,330	160,603
Materials, stores and fuel	{ change during year at end of year	"	"
		- 1,267	- 3,539
		42,435	54,116
Number employed on average during the year	{ total, including working proprietors operatives other employees (f)	No.	No.
		215,482	163,006
		141,861	103,319
		73,473	59,560
Wages and salaries	{ of operatives of other employees (f)	£'000	£'000
		98,043	95,977
		66,992	72,442
Wages and salaries per head	{ operatives other employees (f)	£	£
		691	929
		912	1,216
Capital expenditure (g)			
New building work		£'000	£'000
		3,933	2,825
Land and existing buildings	{ acquisitions disposals	"	"
		509	1,301
		946	1,613
Plant and machinery	{ acquisitions disposals	"	"
		10,454	10,961
		2,081	707
Vehicles	{ acquisitions disposals	"	"
		1,226	1,545
		398	534

For notes to this table - see page 71/6.

TABLE 5 Sales of principal products of the industry by larger establishments, including sales by establishments classified to other industries, 1963 and 1968

Establishments employing 25 or more persons:
Analysis of returns received, United Kingdom

	1963		1968				
	Quantity	Value	Quantity		Value	Enter-prises	Entries
	Number	£'000	Number	Th.cwt.	£'000	Number	Number
Electrical machinery - new							
Machinery for generating, transmitting and distributing electric power							
Generators - alternating current							
Complete							
Not over 100 kVA			20,521	54.7	2,133	27	31
			25,619	..	3,600		
Over 100 but not exceeding 1,000 kVA	..	8,199(a)	1,370	90.7	2,728	19	24
			671	..	1,899		
			..	..	706		
Over 1,000 but not exceeding 30,000 kVA			308	89.0	4,173	5	9
Over 30,000 but not exceeding 125,000 kVA			17	33.4	1,846	*	5
			..	..	5,864		
Over 125,000 but not exceeding 250,000 kVA	45	11,167	1	4.0	101	*	*
Over 250,000 kVA			14	94.1	8,199	*	*
Parts	..	1,500(b)	..	..	3,170	31	38
Generators - direct current							
Complete							
Not over 375 kW	6,883	7,104	2,576	10.0	556	22	26
			1,135	..	673		
			..	..	785		
Over 375 kW			207	15.5	788	*	5
Parts	..	220	..	..	1,085	16	21
Turbines for electricity generation				Th.h.p.			
Complete	67	21,779	64	11,979	40,497	8	13
	..	5,976(c)	..	..	17,473		
Parts	..	1,945	..	..	7,776	25	31
Generator sets, complete (d)	..	3,141	457	..	663	11	12
			..	..	2,784		
Transformers for lighting, heating and power (including choking coils, but excluding radio and electronic components and auxiliary gear for discharge lighting)							
Complete			Number	Th.cwt.			
Not over 5 kVA	..	3,220	174,348	33.2	1,551	52	61
			436,599	..	2,134		
			..	..	1,121		
Over 5 kVA but not exceeding 1,500 kVA			17,495	520	7,576	32	45
			15,161	..	6,149		
Over 1,500 kVA for voltages not exceeding 72.5 kV			908	287	5,436	11	23
			421	..	2,812		
All ratings for voltages over 72.5 kV but not exceeding 200 kV	..	48,372	876	162	4,757	8	14
			97	..	3,428		
All ratings for voltages over 200 kV			57	263	10,453	*	8
			46	..	9,703		

TABLE 5 (continued)

	1963		1968				
	Quantity	Value	Quantity	Value	Enter-prises	Entries	
		£'000		£'000	Number	Number	
Electrical machinery - new (continued)							
Machinery for generating, transmitting and distributing electric power (continued)							
Transformers for lighting, heating and power (including choking coils, but excluding radio and electronic components and auxiliary gear for discharge lighting) (continued)							
Parts	..	3,454	5,493	20	32
Shunt and limiting reactors (e)							
Complete							
On-load tap changers for fitting to transformers	{ 269	{ 752	{ 925	{ 2,080	{ *	{ 5	
	{ ..	{ 190	{ ..	{ 2,593	{ 10	{ 15	
Other	..	51	..	42	*	*	
Parts	..	51	..	42	*	*	
Capacitors for power factor improvement (excluding radio and electronic equipment and auxiliary gear for discharge lighting)							
Complete	..	2,810	..	3,361	13	14	
Parts including ancillary equipment	..	191(f)	..	340	7	7	
Total machinery for generating, transmitting and distributing electric power		120,070		176,529	..	..
Switchgear and control gear							
Starting and controlling gear for industrial, traction and marine electric motors							
Complete							
Industrial (alternating current)	..	..	..	34,983	69	84
Industrial (direct current)	..	34,255	..	3,600	24	27	
Traction	..	..	..	3,687	6	8
Marine	..	..	..	2,601	26	30
Parts	..	5,100	..	6,614	45	55	
Switchgear and switchboards (excluding telegraph and telephone)							
Alternating current (g)							
Complete							
Not exceeding 660 volts	..	30,937	..	25,577	66	81	
Over 660 volts but not exceeding 15,000 volts or 350 mVA	..	27,132	..	21,085	19	30	
Over 15,000 volts or over 350 mVA	..	24,921	..	51,284	7	14	
Parts	..	5,036	..	2,592	29	38	

Continued on next page.

TABLE 5 (continued)

	1963		1968			
	Quantity	Value	Quantity	Value	Enter-prises	Entries
		£'000		£'000	Number	Number
Electrical machinery - new (continued)						
Switchgear and control gear (continued)						
Switchgear and switchboards (excluding telegraph and telephone) (continued)						
Direct current						
Complete	}	(h)	..	2,055	17	19
Parts			..	524	16	18
Fuses and fuse gear						
Complete	..	10,981	..	13,523	39	49
Parts	..	871	..	970	22	26
Total switchgear and control gear		139,233		169,095	..	..
Traction motors						
Complete	Number		Number	Th.cwt.		
For railways, tramways and trolleybuses	5,434	8,304	1,795	83.3	4,542	* 5
Other	11,671	830	7,642	7.6	613	} 10 11
			..	..	1,039	
Parts						
For railways, tramways and trolleybuses	..	480	..	..	1,227	* 7
Other	..	66	..	..	281	12 13
Non-traction motors sold separately						
Fractional horse power motors						
Complete						
Not exceeding one-tenth h.p.	} 2,878,572	7,026 816	2,777,584	118	7,321	} 39 44
			..	2,268,622	..		3,274
Over one-tenth but not exceeding one-third h.p.	..	6,848	954,725	148	5,177	} 37 42
			340,783	..	2,633	
Over one-third but less than 1 h.p.	} 244,064	2,867 618	375,651	122	3,446	} 32 35
			..	169,913	..		2,219
Parts	..	1,652	..	..	1,373	37 42
Alternating current						
Complete						
1 h.p. but not exceeding 10 h.p.	426,655	10,415	255,240	188	5,635	} 31 36
			277,282	..	6,392	
Over 10 h.p. but not exceeding 100 h.p.	115,303	11,763	63,514	214	5,684	} 24 33
			63,219	..	6,290	
Over 100 h.p. but not exceeding 500 h.p.	} 15,669	7,003	4,937	95.6	2,574	} 14 21
					5,375		..	4,136
Over 500 h.p. but not exceeding 1,000 h.p.			273	14.2	657	} 7 12
			298	..	1,499	
Over 1,000 h.p.	186	2,462	212	63.9	3,528	} 6 10
			87	..	803	

TABLE 5 (continued)

	1963		1968			
	Quantity	Value	Quantity	Value	Enter-prises	Entries
	Number	£'000	Number	Th.cwt.	£'000	Number
Electrical machinery - new (continued)						
Non-traction motors sold separately (continued)						
Alternating current (continued)						
Parts	..	1,060	..	..	4,845	30 38
Direct current						
Complete						
1 h.p./0.75 kW but not exceeding 10 h.p./7.5 kW	19,429	1,513	4,710	12.4	564	} 18 22
			9,399	..	509	
Over 10 h.p./7.5 kW but not exceeding 100 h.p./75 kW	7,558	2,889	3,725	22.8	1,119	} 12 18
			1,738	..	1,086	
Over 100 h.p./75 kW but not exceeding 500 h.p./375 kW	} 1,119	2,086	127	4.8	270	} 9 12
				261	..		439
Over 500 h.p./375 kW but not exceeding 1,000 h.p./750 kW			8	3.1	123	} * 5
			377	..	377	
Over 1,000 h.p./750 kW	65	2,063	33	20.0	831	} * *
			..	..	157	
Parts	..	523	..	..	1,341	20 27
Converting machinery						
Complete	..	1,557	1,152	2.1	153	} 10 10
			607	..	35	
Parts	..	78	..	..	247	5 5
Mercury arc rectifiers including ignitrons (glass bulb and steel tank) (i)						
Complete	..	1,992	12,908	..	1,261	* 5
Parts	..	165	..	..	115	* *
Power rectifiers, electronic, metal and semi-conductor (excluding mercury arc, hot cathode mercury vapour and gas-filled rectifiers)						
Complete	..	2,444	98,553	198	2,085	} 21 25
			..	..	7,051	
Parts	..	163	..	..	474	7 9
Moulded case circuit-breakers (including miniature and earth leakage circuit breakers)	..	(j)	1,231,253	8.9	1,385	} 14 15
			232,710	..	426	
Battery chargers	..	1,951	..	..	1,386	51 52
Other electrical machinery, new (excluding electricity meters) (k)						
Complete	..	7,506	..	..	10,293	45 46
Parts	..	2,628	..	..	1,423	34 35

Continued on next page.

TABLE 5 (continued)

	1963		1968			
	Quantity	Value £'000	Quantity	Value £'000	Enter- prises Number	Entries Number
Electrical machinery - reconditioned						
Complete	..	831	..	1,187	22	22
Parts	..	9	..	210	11	11
Other products	..	1,504	..	123	7	7
Waste products						
Scrap metals	Th. tons		Th. tons			
Iron and steel	90.3	631	83.1	631	86	121
	..	112	..	103		
Copper	4.0	715	4.1	1,420	110	144
Brass	4.2	572	2.4	589	59	84
Other metals	..	286	..	261	44	67
Other waste products	..	33	..	73	16	30
Work done						
Electrical machinery installed (1)		8,800		11,860	41	58
Repair and maintenance work on customers' electrical machinery, plant, apparatus and appliances		16,724		16,448	367	395
Other work done				1,527	22	26
Total		379,290		496,650	..	..
Sales in other industries (see Table 6)		28,732		60,378	..	..
Principal products of this industry sold by establishments in the industry		350,558		436,271	220	294(m)

(a) Including parts of generators (alternating current) not exceeding 30,000 kVA for 1963.

(b) Excluding parts of generators (alternating current) not exceeding 30,000 kVA for 1963.

(c) Estimated figures. For 1963, turbines for electricity generation were not recorded separately. The data shown are mainly based on those returns which in 1968 recorded sales of turbines for electricity generation.

(d) Firms were asked to show separate figures for the prime mover and generator components of generator sets wherever practicable.

(e) For 1963 described as 'Current limiting reactors'.

(f) Ancillary equipment was not included for 1963.

(g) Including direct current, complete and parts for 1963.

(h) Included with alternating current for 1963.

(i) For 1963 'Ignitrons' were not specifically included.

(j) Not recorded separately for 1963.

(k) For electricity meters, see the Scientific and Industrial Instruments and Systems Industry (Part 70).

(l) For 1963 described as 'Machinery purchased and installed and other installation work'.

(m) This figure represents the total number of returns made for larger establishments in this industry which is less than the total number of establishments shown in Table 4 on account of combined returns covering more than one establishment.

TABLE 6 Sales of principal products of the industry by larger establishments classified to other industries, 1963 and 1968

Establishments employing 25 or more persons:
Analysis of returns received, United Kingdom

	1963		1968		Principal industries in which produced (a)
	Value £'000	Quantity Number	Value £'000	Entries Number	
Electrical machinery - new					
Machinery for generating, transmitting and distributing electric power					
Generators - alternating current					
Complete	1,511	20,002	2,040	7	53,78,79,80
Parts	335	..	693	10	52,53,78,80
Generators - direct current					
Complete	598	..	607	5	53,78,79,97
Parts		..	268	*	53,79
Turbines for electricity generation, complete and parts (b)	2,025	..	6,377	23	52,53,64,84
Generator sets, complete	802	..	1,658	*	53,55,79,84
Transformers for lighting, heating and power (including choking coils, but excluding radio and electronic components and auxiliary gear for discharge lighting), complete and parts	2,251	..	8,289	24	70,74,78,79
Shunt and limiting reactors, complete and parts	63	..	598	5	70,74,79
Capacitors for power factor improvement (excluding radio and electronic equipment and auxiliary gear for discharge lighting), complete and parts	2,465	..	2,797	10	70,72,74,79
Total machinery for generating, transmitting and distributing electric power	10,050		23,327	..	
Switchgear and control gear					
Starting and controlling gear for industrial, traction and marine electric motors					
Complete					
Industrial (alternating current)	1,727	..	839	19	(c)
Industrial (direct current)		..	37	5	70,77
Traction and marine		..	74	5	45,77
Parts	439	..	612	9	63,73,74,93
Switchgear and switchboards (excluding telegraph and telephone)					
Alternating current					
Complete	3,796	..	6,708	18	67,70,78,97
Parts		..	490	10	67,74,78,79
Direct current					
Complete	..	..	406	5	77,78,79,80
Parts	..	..	458	7	54,70,74,87

Continued on next page.

TABLE 6 (continued)

	1963		1968		Principal industries in which produced (a)
	Value	Quantity	Value	Entries	
	£'000		£'000	Number	
Electrical machinery - new (continued)					
Switchgear and control gear (continued)					
Fuses and fuse gear					
Complete	} 2,013 {	..	5,785	11	72,78,79,97
Parts		..	564	10	72,78,79,97
Total switchgear and control gear	7,975		15,974	..	
Non-traction motors sold separately					
Fractional horse power motors					
Complete		Number	Th. cwt.		
Not exceeding one-tenth h.p.	} 1,981 {	{ 957,194	54.0	2,555	} 16 { 70,74,78,79
Over one-tenth but not exceeding one-third h.p.		{ ..	..	910	
Over one-third but less than 1 h.p.		{ 456,248	65.2	2,297	} 9 { 73,78,79
Parts	{ 146,227	..	776		
Over one-third but less than 1 h.p.	{ 62,977	18.0	539	} 8 { 52,70,78,79	
Parts	{ ..	..	1,128		
Parts		..	305	7	70,73,79
Alternating current and direct current, complete and parts	1,128	..	1,062	9	52,62,78,79
Converting machinery, complete and parts	(d)	..	235	*	62,70,74,79
Power rectifiers, electronic, metal and semi-conductor (excluding hot cathode mercury vapour and gas-filled rectifiers) and mercury arc rectifiers including ignitrons (glass bulb and steel tank), complete and parts	888	..	1,303	11	70,74,79
Moulded case circuit-breakers (including miniature and earth leakage circuit breakers)	(e)	..	227	5	70,79
Battery chargers	447	..	1,649	33	70,74,77,79
Other electrical machinery, new (excluding electricity meters)					
Complete	1,181	..	1,798	27	(b)
Parts	1,240	..	737	28	(b)
Electrical machinery, reconditioned, complete and parts (b)	150	..	210	6	51,63,77,79
Electrical machinery installed and other installation work including repair and maintenance work on customers' electrical machinery, plant, apparatus and appliances (f)	3,691		5,346	293	72,73,77,151
Total	28,732		60,378	..	

(a) The references given are to the list of industries at the front of this report.

(b) Excluding parts for 1963.

(c) Production is widely distributed.

(d) Included with 'Other electrical machinery, new' for 1963.

(e) Not recorded separately for 1963.

(f) Excluding 'Electrical machinery installed and other installation work' for 1963.

TABLE 7 Sales of other than principal products by larger establishments in the industry, 1963 and 1968

Establishments employing 25 or more persons:
Analysis of returns received, United Kingdom

	1963		1968	
	Value	Value	Value	Value
	£'000	£'000	£'000	£'000
Mechanical engineering				
Welding machinery	279		900	
Pumps, valves and compressors			5,203	
Industrial engines			3,322	
Mechanical handling equipment				
Complete	} 18,499 {		1,475	
Parts			141	
Miscellaneous (non-electrical) machinery			1,609	
Industrial (including process) plant and steelwork			4,856	
Other mechanical engineering products			9,904	
Scientific and industrial instruments and systems				
Industrial control systems	} 7,839 {		6,270	
Other			4,806	
Electrical engineering				
Radio and electronic components				
Passive components, sold separately	} 12,674 {		4,694	
Other			2,279	
Radio, radar and electronic capital goods	(a)		486	
Electric appliances primarily for domestic use				
Cooking apparatus and appliances	} 8,934 {		248	
Heating apparatus, electric			211	
Other			424	
Miscellaneous electrical goods				
Wiring accessories, up to 250 volts, 30 amps. (eg lamp-holders, ceiling roses, wall plugs and sockets, switches, etc)	} 5,058 {		1,743	
Mainly of brass			1,125	
Mainly of plastics			239	
Other (porcelain, etc)		244		
Joint boxes		4,011		
Other (including electric lamp bulbs)				
Shipbuilding and marine engineering products			2,713	
Railway signalling apparatus, electrical, and locomotives, complete and parts	} 28,094 {		4,681	
Miscellaneous metal goods			1,336	
Other products			10,848	
Total goods sold	81,375		73,769	

Continued on next page.

TABLE 7 (continued)

	1963	1968
	Value	Value
	£'000	£'000
Work done		
Building and civil engineering work carried out in Great Britain, including structural work and the erection and installation of air-conditioning, heating and ventilating plant, but not of other industrial machinery and plant (b)		
Work done as main contractors	455	663
Work done as sub-contractors	359	501
Research and development	3,774	1,205
Machinery installed and installation work other than electrical machinery	(a)	7,058
Repair and maintenance work on other than electrical machinery including other work done	2,351	1,678
Services rendered to other organisations (c)	851	1,231
Total value of goods sold without having been subjected to any manufacturing process (merchanted or factored)	35,833	43,105
Canteen takings	1,946	1,539
Total	126,944	130,750

(a) Not recorded separately for 1963.

(b) For 1968 the value of goods made and used in building and civil engineering work is estimated as £7,000 whereas for 1963 no such information was recorded.

(c) Amounts charged for hiring out plant, machinery or other goods, for providing transport, or for technical or other services rendered to other organisations.

TABLE 8 Production of certain principal products of the industry by larger establishments, 1963 and 1968

This table is not applicable to this industry.

TABLE 9 Purchases by larger establishments of selected principal products of the industry, 1968

This table is not applicable to this industry.

TABLE 10 Purchases by larger establishments in the industry, 1963 and 1968

Establishments employing 25 or more persons: Analysis of returns received, United Kingdom

	1963		1968	
	Quantity	Cost	Quantity	Cost
	Th. tons	£'000	Th. tons	£'000
Materials for use in production				
Iron				
Pig iron, including refined pig iron, and other irons for re-melting	20.8	1,123	..	472
Castings	46.2	4,568	41.7	5,388
Steel				
Ingots, blooms, billets, slabs (including sheet/plate mill slabs and sheet bars)	..	400	7.6	688
Bars and rods (including wire rods), angles, shapes and sections, girders, beams, joists and pillars rolled (not fabricated), including tube rounds and squares	62.8	4,534	87.9	5,879
Plates, 3 mm. thick and over	106	5,552	102	6,529
Sheets under 3 mm. thick (including electrical sheets)	..	13,655	120	12,909
Hoop and strip (including tape of all thicknesses)	18.3	1,741	15.7	1,489
Tinplate and blackplate (a)	0.6	41	0.3	22
Forgings (except drop forgings)	16.1	4,607	14.2	4,260
Castings	25.2	4,799	19.2	4,326
Iron and steel not elsewhere specified except finished parts, wire and scrap				
Wrought tubes and fittings for wrought tubes (including welded, seamless, conduits, etc)	23.5	1,399	7.0	900
Other	..	2,298	..	524
Steel wire and wire manufactures (including wire cables and ropes but excluding insulated wires and cables)	..	207	19.6	2,451
Springs, laminated and other types	..	550	..	4,969
Light metals and non-ferrous metals in all forms except finished parts, wire and scrap				
Aluminium and aluminium alloys	9.1	2,899	10.7	105
Brass and other copper alloys (including nickel silver and cupro-nickel, but excluding all other nickel alloys and cadmium copper) (b)	14.5	4,586	11.9	28
Copper (including cadmium copper) (c)				
Castings	..	9,194	0.9	489
Forgings	..		0.1	86
Rods, extrusions and bars	..		10.8	6,923
Other	..		6.2	3,909
Lead and alloys of lead (excluding solder)	..	65	0.3	41
Zinc and alloys of zinc	0.7	121	0.9	237
	..	88	..	124
Nickel and nickel alloys (excluding nickel silver, and cupro-nickel)	..	(d)	Th.cwt.	
Tin	..	94	3.6	174
	..		1.2	64

Continued on next page.

TABLE 10 (continued)

	1963		1968	
	Quantity	Cost	Quantity	Cost
Materials for use in production (continued)		£'000		£'000
Solder, soft	..	237	..	250
Uninsulated wire and cables of non-ferrous metals				
Copper	..	1,333	..	4,132
Other non-ferrous metals	..	647	..	413
Bitumen and bitumastic compounds	..	181	..	94
Glass in all forms (including finished parts)	..	738	..	524
Insulating oils	..	1,821	..	1,477
Mica				
Block and splittings	..	386	..	241
Built-up (Micanite) including components (e)	..	441	..	641
Disintegrated mica, sheet or rolled	..	(d)	..	124
Other mica products	..	(d)	..	156
Paper and paperboard including press-board and paper yarn, tubes, etc but excluding packaging materials	..	1,415	..	1,620
Porcelain and other ceramics in all forms	..	3,544	..	3,011
Manufactures wholly or mainly of rubber (including synthetic rubber), balata and gutta-percha (including sheeting) but excluding replacement parts for firms' own machinery, plant, vehicles, etc (f)	..	945	..	715
Paint and varnish (including lacquers and stains)	..	1,394	Th. gal. 834	1,233
Synthetic resins and plastics materials (excluding leathercloth and reinforced plastics)				
Polyethylene and polypropylene and copolymers				
Granules, moulding and extrusion compounds	Th. cwt. 17.0	224	Th. cwt. 1.5	32
Sheet, rod, film, profile shapes and monofilament	..	(d)	..	20
Polyvinyl chloride (including copolymers)				
Polymers and copolymers including the net resin content of latices, solutions and dispersions plasticised moulding and extrusion compounds (g)	4.6	51	2.0	34
Plasticised and unplasticised sheet, film rod, tube profile shapes and foam	..	(d)	..	54
Polystyrene (including copolymers) (h)	17.2	199	2.3	29
Phenolics and allied products: resins (the net resin content), solutions, emulsions, dispersions, moulding and extrusion compounds (i)	49.9	479	56.5	792
Laminated thermosetting sheet (including decorative), cast sheet, laminated or cast rod, tube and profile shapes	55.4	976	12.5	357
Aminoplastics (melamine and urea formaldehyde)	..	(d)	19.7	243
Thermosetting polyesters, including epoxide resins (the net resin content excluding filler) and resin glass fibre mixtures	13.8	192	16.6	529
	..	469	..	110

TABLE 10 (continued)

	1963		1968	
	Quantity	Cost	Quantity	Cost
Materials for use in production (continued)		£'000		£'000
Timber				
Softwood and hardwood, manufactured or semi-manufactured (ie further prepared than sawn or planed)	..	272	..	228
Plywood, including blockboard, laminboard and battenboard	Th. sq. ft. 1,064	95	..	202
Textiles (excluding packaging materials)				
Yarn, thread, tape and cloth, not oiled or otherwise coated or impregnated with insulating materials	Th. lb.		Th. lb.	
Of cotton	176	89	439	173
Of man-made fibres (nylon, rayon, etc)	309	162	99.8	110
Of glass fibre	..	(d)	..	70
Insulated wires, cables, strips and strands	..	11,623	..	14,754
Electrical insulating materials not elsewhere specified	..	2,475	..	2,153
Bolts, rivets, nuts and washers, screws, nails and tacks, etc	..	(d)	..	3,135
Electrical machinery				
Fractional horse-power motors (less than 1 h.p.)	..	829	..	656
Motors (A.C. and D.C.) 1 h.p. and over			..	1,185
Control gear			..	3,201
Fuse gear			..	1,036
Switch gear	..	11,510	..	2,618
Generators			..	1,036
Transformers and rectifying apparatus			..	2,406
Other electrical machinery			..	1,746
Electrical components not elsewhere specified				
Valves, electronic (other than X-ray valves), electronic stabilising tubes and cathode ray tubes (excluding mercury pool rectifiers)	..	727	..	598
Batteries and accumulators	..	354	..	572
Magnets, permanent	..	246	..	165
Semi-conductor devices	Thousands 3,516	1,090	Thousands 840	688
Capacitors	..	943	..	1,571
Resistors			..	1,505
Micro-circuits	..	5,329	..	820
Silicon transistors			..	85
Other electrical components			..	408
Other components for incorporation in firms' own products			..	8,994
Internal combustion engines	..	5,570	..	3,293
Ball and roller bearings and parts thereof	..	1,798	..	2,090
Measuring and control instruments (including ammeters, voltmeters, thermostats, etc)	..	6,824	..	4,601

Continued on next page.

TABLE 10 (continued)

	1963		1968	
	Quantity	Cost	Quantity	Cost
Materials for use in production (continued)		£'000		£'000
Other components for incorporation in firms' own products (continued)				
Other components not elsewhere specified				
Wholly or mainly of plastics materials	..	1,499	..	1,128
Other materials except of rubber or glass	..	18,177	..	18,135
Lubricating oils and greases (including cutting oils and emulsions)	Th. gal. 775 Th. cwt. 7.0 ..	231 43 53	Th. gal. 1,176 Th. cwt. 2.5 ..	394 34 57
Replacement parts for firms' own machinery, plant and vehicles, and accessories and consumable tools bought as replacement				
Tyres and other spare parts for firms' own road goods vehicles	..	3,914	..	172
Other	..	..	..	2,532
All other materials for use in production	..	25,250	..	17,032
Packaging materials				
Paper and board				
Boxes, cartons, drums and canisters (with or without metal ends) of paper and cardboard	..	664	..	579
Fibreboard packing cases	..	..	..	53
Wrapping and packing paper (including paper coated with plastics and any laminates incorporating paper but not metal)	..	..	..	149
Other packaging materials of paper and paperboard (including moulded pulp units and labels, but excluding bags and multiwall paper sacks and paper and board for converting into packaging materials)(j)	..	177	..	98
Timber				
Containers wholly or mainly of wood (including plywood boxes and drums other than cable drums), baskets and wickerwork crates (k)	..	673	..	543
Timber (sawn or planed) and plywood for manufacture into packing cases, etc	..	563	..	558
All other packaging materials	..	211	..	245
Fuel and electricity (l)				
Coal	Th. tons 281	1,439	Th. tons 154	1,024
Coke (including screenings) and manufactured fuel	29.9 .. Th. gal. 2,551	203 35	14.2 .. Th. gal. 2,452	218 26
Derv fuel and motor spirit for use in road vehicles	..	524	..	77
Other liquid fuels (including creosote/pitch mixtures, etc and liquefied petroleum gases)	44,254	1,916	25,146 ..	1,105 351 ^(m)
Gas	Th. therms 17,770 ..	976 104	Th. therms 11,487 ..	779 141

TABLE 10 (continued)

	1963		1968	
	Quantity	Cost	Quantity	Cost
Fuel and electricity (continued)				
Electricity	Th. kWh 639,214 ..	£'000 3,481 418	Th. kWh 463,641 ..	£'000 3,614 866
Total cost of materials and fuel		190,585		202,522
Goods purchased for merchanting		30,014		36,868
Canteen purchases		1,654		1,353
Total cost of purchases		222,253		240,744

- (a) Terneplate was specifically included for 1963.
(b) For 1963 'cadmium copper' was not specifically excluded.
(c) For 1963 cadmium copper was not specifically included but blister was excluded.
(d) Not recorded separately for 1963.
(e) For 1963 'components' were not specifically included.
(f) For 1963 described as 'Rubber, including hard rubber, balata, gutta-percha and synthetic rubber in all forms, including finished parts'.
(g) For 1963 'emulsions' were specifically included.
(h) For 1963 'copolymers' were not specifically included.
(i) For 1963 described as 'Phenolics and cresylics: Resins, solutions, emulsions, dispersions, moulding and extrusion compounds'.
(j) For 1963 'bags' and 'paper and board for converting into packaging materials' were not specifically excluded.
(k) For 1963 'cable drums' were not specifically excluded.
(l) The total quantity of electricity generated in establishments employing 25 or more persons in this industry was 17,683 Th.kWh in 1968 and 58,683 Th.kWh in 1963.
(m) For 1968 may include a small amount of fuels not covered by specific headings.

TABLE 11 Transport costs and employment of larger establishments, 1963 and 1968

Establishments employing 25 or more persons:
Analysis of returns received, United Kingdom

	Unit	1963	1968
Average number mainly employed on transport	No.	1,224	1,167
Transport costs			
Wages and salaries	£'000	960	1,218
Derv fuel and motor spirit	"	524	704
Tyres and other spare parts for road goods vehicles	"	..	172
Payments to other organisations for transport	{ by road by rail and other means excluding postal services	{ 3,721	{ 3,587 799
Costs of operating road goods vehicles			
Insurance	"	112	90
Vehicle licences	"	62	126
Depreciation	"	502	654
Payments to other organisations for repairs and maintenance	"	180	232
Total	"	6,061 (a)	7,582

(a) Excluding tyres and other spare parts for road goods vehicles, not collected separately for 1963.

TABLE 12 Payments for certain services, etc by larger establishments, 1963 and 1968 (a)

Establishments employing 25 or more persons:
Analysis of returns received, United Kingdom

	Amounts payable	
	1963	1968
Repairs and maintenance to	£'000	£'000
Buildings	1,341	1,180
Road goods vehicles	180	232
Plant, machinery and other capital equipment	1,189	1,673
Insurance, licensing and depreciation of road goods vehicles (b)	677	870
Rates, excluding water rates	2,646	3,459
Hire of plant and machinery	546	610
Postage, telephone, telegrams, cables and telex (c)	1,799	2,525
Total	8,377	10,549

(a) No deduction is made for these payments to arrive at the figures of net output given in this report.

(b) For details see Table 11.

(c) Excluding telex for 1963.

TABLE 13 Percentage analysis of twelve-month periods covered by returns from larger establishments, 1968

Establishments employing 25 or more persons:
Analysis of returns received, United Kingdom

Year ended	Percentage of total returns received	Percentage of total number employed
1968	Per cent.	Per cent.
April (a)	2.7	1.0
May	2.4	1.1
June	5.8	1.6
July	2.0	2.5
August	0.3	0.0
September	8.2	8.3
October	4.8	4.0
November	1.7	0.7
December	38.8	51.7
1969		
January	4.4	2.7
February	2.7	1.1
March	24.8	25.0
April (b)	1.4	0.3
	100	100

(a) From 6 April.

(b) To 5 April.

TABLE 13. Percentage change of twelve-month period ending in various months, 1949-1952

Month	1952	1951	1950	1949
January	100	100	100	100
February	100	100	100	100
March	100	100	100	100
April	100	100	100	100
May	100	100	100	100
June	100	100	100	100
July	100	100	100	100
August	100	100	100	100
September	100	100	100	100
October	100	100	100	100
November	100	100	100	100
December	100	100	100	100

(a) From 1949 to 1952.
 (b) To 1952.

Month	1952	1951	1950	1949
January	100	100	100	100
February	100	100	100	100
March	100	100	100	100
April	100	100	100	100
May	100	100	100	100
June	100	100	100	100
July	100	100	100	100
August	100	100	100	100
September	100	100	100	100
October	100	100	100	100
November	100	100	100	100
December	100	100	100	100

(a) From 1949 to 1952.
 (b) To 1952.