

51 Metal-working machine tools

This Report on the Metal-working Machine Tools Industry relates to establishments engaged wholly or mainly in manufacturing machine tools and parts thereof including metal-cutting machine tools, boring, drilling, grinding and milling machines; lathes and other turning machines; machining centres; metal-forming machine tools, including forging machines and hammers, extrusion and other presses, wire-drawing machines and sheet metal-working machines; all types of electric and gas welding machinery and equipment, flame-cutting machines and welding electrodes and rods; physico-chemical process cutting and forming machines including equipment for high energy rate forming, electrochemical machinery, ultrasonic erosion, etc. Electron beams and laser machines for metal working are included but rolling mills, portable power tools and metal manufacturing plant are excluded.

This industry corresponds to minimum list heading 332 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 Metal-working Machine Tools Industry (Part 42) in the Reports on the last detailed Census of Production for 1963, except that tube welding machinery and cold drawing machinery for bars and tubes and wire rope making machinery formerly included in the 1963 report on Miscellaneous (Non-electrical) Machinery (Part 49) are now included in this industry. In addition the treatment of parts has been altered considerably for 1968 for this and other mechanical engineering industries. The distinction made in the 1963 reports between parts sold in association with the sale of complete machines, and other parts sold, has been discontinued for 1968 and all parts are now treated in the same way as complete machines for classification ie as principal products of their respective mechanical engineering industries and shown in Table 5.

Throughout this Report, the figures given for 1963 have been reclassified, as far as possible, according to the Standard Industrial Classification (Revised 1968) and to take account of the different treatment of parts adopted for 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.

METHOD OF CLASSIFICATION

In classifying returns to this industry the value of unspecified work done (other than structural and installation work), including repair work, was not taken into account unless it amounted to 80 per cent. or more of the total output of the return in which case the return was classified to General Mechanical Engineering (Part 66). The amount charged for erecting and installing machinery and plant (other than air conditioning, heating and ventilating plant) was treated as part of the selling value of these items in determining the industrial classification of returns. The standard classification procedure as outlined in the notes on page (i) was further modified where a return would have been classified to one of the mechanical engineering industries relating to a specific class of machinery (viz, Parts 50 to 66) but where the sales of the principal products of the industry concerned (including parts) accounted for less than 20 per cent. of the total output: in such cases the return was classified to the residual subdivision of the General Mechanical Engineering Industry (Part 66). The classification of returns to sub-divisions of the industry, shown in Table 4, followed the standard procedure.

The sales of characteristic products shown in Table 4 include, besides the value of complete metal-working machine tools and parts which were taken into account in classifying returns, the value of installation work.

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).

LIST OF TABLES

Table No.	Title	Page
SECTION I - Estimates for all establishments in the industry		
1	Industry summary, 1963 and 1968	51/3
2	Analysis by size of establishment within the industry, 1968	51/4
3	Percentage analysis of employees, by age and sex, 1969	51/5
SECTION II - Analysis of returns received		
4	Analysis of larger establishments, 1963 and 1968	51/6
5	Sales of principal products of the industry by larger establishments, including sales by establishments classified to other industries, 1963 and 1968	51/8
6	Sales of principal products of the industry by larger establishments classified to other industries, 1963 and 1968	51/13
7	Sales of other than principal products by larger establishments in the industry, 1963 and 1968	51/16
8	Production of certain principal products of the industry by larger establishments, 1963 and 1968	DOES NOT APPLY
9	Purchases by larger establishments of selected principal products of the industry, 1968	DOES NOT APPLY
10	Purchases by larger establishments in the industry, 1963 and 1968	51/18
11	Transport costs and employment of larger establishments, 1963 and 1968	51/21
12	Payments for certain services, etc by larger establishments, 1963 and 1968	51/22
13	Percentage analysis of twelve-month periods covered by returns from larger establishments, 1968	51/22

Footnotes continued from page 51/3.

(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.	437	548
Number of establishments	"	553	672
Gross output	£'000	196,084	258,087
Net output	"	104,274	136,945
Net output per head	£	1,402	1,900
Sales and work done	£'000	164,484	217,183
	"	31,525	31,243
Purchases	"	57,754	89,138
	"	26,409	22,871
Payments to other organisations	"	5,390	9,071
	"	1,250	1,291
	"		316
Stocks and work in progress	"	- 932	+ 11,207
Total stocks and work in progress	"	72,153	107,093
	"	+ 297	+ 1,690
Goods on hand for sale	"	14,786	23,090
	"	- 223	+ 7,972
Work in progress	"	38,667	52,337
	"	- 1,007	+ 1,544
Materials, stores and fuel	"	18,700	31,666
	"	74.4	72.1
Number employed on average during the year	"	53.3	48.9
	"	20.6	22.7
	"	41,138	50,171
Wages and salaries	"	19,360	29,034
	"	7,342	13,657
Capital expenditure (e)	"	1,505	3,604
Total	"	- 36	- 277
New building work	"	5,446	9,660
Land and existing buildings (f)	"	427	669
Plant and machinery (f)	"		
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 5 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 4 per cent. and 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	239	370
Average number employed:		
Working proprietors	329	376
Other persons employed	2,369	3,199

Footnotes continued on page 51/2.

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
	Number	Number	Number	£'000	£'000	£
1-5	85	84	287	..	..	..
6-10	88	86	674	..	..	..
11-24	129	126	2,136	..	..	..
25-49	48	48	1,810	6,557	3,141	1,736
50-99	88	84	6,341	22,339	11,374	1,794
100-199	64	51	9,053	31,364	17,773	1,963
200-299	33	27	8,345	33,001	17,597	2,109
300-399	19	15	6,658	26,235	14,706	2,209
400-499	12	12	5,295	19,585	9,908	1,871
500-749	19	13	11,713	37,415	20,402	1,742
750-999	5	4	4,353	17,485	7,221	1,659
1,000 and over	9	8	14,709	50,615	27,756	1,886
Unsatisfactory returns	73	72	698	..	..	..
Total	672	548	72,072	258,087(c)	136,945(c)	1,900(c)

(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	1,329	446	1,252	552	942	1,237
50-99	4,739	1,532	4,718	1,950	996	1,273
100-199	6,211	2,835	6,096	3,716	981	1,311
200-299	5,443	2,897	5,862	3,706	1,077	1,279
300-399	4,431	2,224	4,700	2,961	1,061	1,331
400-499	3,610	1,685	3,659	2,185	1,013	1,297
500-749	7,905	3,807	8,336	4,762	1,054	1,251
750-999	2,855	1,498	2,676	2,010	937	1,342
1,000 and over	10,037	4,673	10,484	5,827	1,044	1,246
Unsatisfactory returns	..	..	..	..	..	..
Total	48,911(c)	22,661(c)	50,171(c)	29,034(c)	1,026(c)	1,281(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	82	14	96
All ages	85	15	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 20 establishments in 1968 and 23 in 1963.
- (b) The method of classifying returns to sub-divisions of the industry is explained in the notes; the characteristic products of each sub-division are identified in Table 5.
- (c) The sum of the figures for the sub-divisions exceeds the total for the industry to the extent that enterprises made returns for more than one sub-division.
- (d) 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).
- (e) Direct sales of goods (excluding canteen takings) made to, and work done for, the general public by larger establishments are included. These amounted to £5,000 in 1968. Similar information is not available for 1963.
- (f) Characteristic products relate only to sub-divisions of the industry.
- (g) For sub-divisions of the industry, this is the ratio of sales of characteristic products to total sales of goods produced and work done. For the industry as a whole, this is the ratio of total sales of principal products by the industry to total sales of goods produced and work done.
- (h) Progress payments received for work in progress in 1968 from United Kingdom customers were recorded as £2,964,000 at the beginning of year and £2,491,000 at the end of year; and from overseas customers £849,000 at the beginning of year and £1,355,000 at end of year. Similar information is not available for 1963.
- (i) Administrative, technical and clerical employees.
- (j) 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	Sub-divisions of the industry (b)		Sub-divisions of the industry (b)							
		Welding and flame-cutting equipment		Metal-cutting and metal-forming machine tools and parts			Total				
		30		Total	Metal-cutting, other than physico-chemical machinery 10	Metal-forming, other than physico-chemical machinery 20			Other, including metal-working machine tools reconditioned 40		
		1963	1968				1963	1968		1968	1968	1963	1968
Number of enterprises (c)	No.	31	33	183	182	113	54	15	211	205	
Number of establishments	"	36	44	289	273	194	64	15	325	317	
Gross output	£'000	18,201	38,617	169,414	206,734	166,054	36,619	4,061	187,615	245,350	
Net output	"	8,531	15,759	91,240	114,428	92,299	19,994	2,135	99,771	130,187	
Net output per head	£	1,383	1,979	1,403	1,890	1,862	2,026	1,922	1,402	1,900	
Sales and work done	{ goods produced and work done (d) (e) merchanted goods and canteen takings	£'000	16,039	28,312	141,341	178,152	141,733	32,938	3,481	157,380	206,464
Sales of characteristic products	"	"	2,441	9,465	27,723	20,235	17,215	2,533	487	30,164	29,701
Index of specialisation (g)	Per cent.	"	13,372	26,244	(f)	(f)	124,144	26,236	2,294	(f)	(f)
Purchases	{ materials for use in production and packaging, and fuel goods for merchandising and canteen purchases	£'000	7,308	14,884	47,952	69,856	55,270	13,150	1,436	55,260	84,739
Payments to other organisations	{ for work done on materials given out for transport by road by rail and other means excluding postal services	"	1,669	7,082	23,599	14,661	11,996	2,229	436	25,268	21,742
Stocks and work in progress	"	"	311	563	4,847	8,059	6,667	1,354	38	5,158	8,623
Goods on hand for sale	{ change during year at end of year	"	299	502	897	725	466	207	52	1,196	1,227
Work in progress (h)	"	"	94	94	207	145	56	6	6	300	300
Materials, stores and fuel	{ change during year at end of year	"	+	14	+ 690	+ 1,593	+ 1,090	+ 460	+ 43	+ 284	+ 1,607
Number employed on average during the year	{ total, including working proprietors operatives other employees (i)	No.	-	405	12,804	17,628	14,414	2,345	869	14,147	21,951
Wages and salaries	{ of operatives of other employees (i)	£'000	+	127	- 340	+ 6,753	+ 6,016	+ 688	+ 49	- 213	+ 7,578
Wages and salaries per head	{ operatives other employees (i)	£	"	825	34,659	47,065	40,282	6,462	321	36,997	49,754
Capital expenditure (j)	"	"	2,339	2,690	- 879	+ 1,202	+ 790	+ 370	+ 42	- 963	+ 1,468
New building work	"	"	-	84	15,836	25,304	20,843	4,079	382	17,892	30,103
Land and existing buildings	{ acquisitions disposals	"	6,168	7,964	65,017	60,551	49,571	9,869	1,111	71,185	68,515
Plant and machinery	{ acquisitions disposals	"	3,988	4,750	47,222	41,988	34,533	6,622	833	51,210	46,738
Vehicles	{ acquisitions disposals	"	2,159	3,190	17,676	18,464	14,977	3,220	267	19,835	21,654
	"	"	2,969	4,488	36,547	43,455	35,782	6,832	841	39,517	47,942
	"	"	2,119	4,104	16,476	23,640	18,942	4,372	326	18,595	27,743
	"	"	745	945	774	1,035	1,036	1,032	1,009	772	1,026
	"	"	982	1,286	932	1,280	1,265	1,358	1,220	938	1,281
	"	"	84	448	1,356	2,978	2,587	374	17	1,440	3,427
	"	"	5	21	405	209	166	42	1	410	229
	"	"	11	136	433	356	355	1	-	444	492
	"	"	266	914	5,302	9,164	7,739	1,258	167	5,568	10,078
	"	"	7	31	349	863	725	103	35	357	894
	"	"	92	143	604	1,037	791	218	28	696	1,180
	"	"	47	57	240	487	390	89	8	287	544

For notes to this table - see page 51/5.

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

Industry sub-division (a)	1963		1968			
	Quantity	Value £'000	Quantity	Value £'000	Enterprises	Entries
Metal-working machine tools (excluding portable power tools, die casting machinery, rolling mills, metal manufacturing plant, and small tools for use in machine tools)						
New						
10 Metal cutting machine tools, other than physico-chemical metal cutting machinery complete						
Boring						
Horizontal			325	5,444	10	12
Vertical			56	1,611	5	6
Fine			..	598	9	9
Jig			{ 128	{ 1,066	{ 8	{ 8
Other			{ ..	{ 127	{ 7	{ 8
Other			{ 96	{ 145	{ 7	{ 8
Other			{ ..	{ 96	{ *}	{ *}
Broaching			..	1,442	*	*
Drilling						
Vertical			9,928	3,400	25	25
Radial			..	1,317	12	14
Other			{ 2,141	{ 904	{ 19	{ 20
Other			{ ..	{ 562	{ 19	{ 20
Gear making and finishing						
Cutting and generating						
Hobbers			115	763	6	6
Other			..	1,735	6	6
Other (including finishers)			138	571	6	6
Grinding						
Cylindrical						
External			1,768	8,825	16	18
Internal			473	1,711	6	7
Surface			2,856	5,811	21	24
Other			{ 3,825	{ 4,162	{ 41	{ 50
Other			{ ..	{ 449	{ 41	{ 50
Honing			369	560	8	8
Lapping			216	205	9	10
Milling						
Knee and column		108,757	{ 4,295	{ 8,075	{ 17	{ 20
Bed type			..	823	17	20
Other			399	2,857	10	11
Other			{ 194	{ 1,762	{ 15	{ 18
Other			{ ..	{ 324	{ 15	{ 18

TABLE 5 (continued)

Industry sub-division (a)	1963		1968			
	Quantity	Value £'000	Quantity	Value £'000	Enterprises	Entries
Metal-working machine tools (excluding portable power tools, die casting machinery, rolling mills, metal manufacturing plant, and small tools for use in machine tools) (continued)						
New (continued)						
10 Metal cutting machine tools, other than physico-chemical metal cutting machinery complete (continued)						
Planing, shaping and slotting machines						
Planing			71	656	7	8
Shaping			{ ..	{ 531	{ 6	{ 7
Slotting			{ ..	{ 531	{ 6	{ 7
Sawing and cutting off			{ 8,392	{ 1,194	{ 29	{ 29
Sawing and cutting off			{ ..	{ 315	{ 29	{ 29
Screwing and threading			430	2,268	9	10
Unit heads			{ 207	{ 207	{ 12	{ 15
Unit heads			{ ..	{ 123	{ 12	{ 15
Transfer and single station machines (ie unit construction machines)			895	9,591	29	32
Machining centres			85	1,916	5	5
Turning						
Automatics						
Bar			1,650	7,775	12	14
Chucking			539	5,294	8	10
Capstan and turret lathes			2,861	8,456	13	14
Centre lathes			15,252	12,368	23	27
Copying lathes			264	1,547	8	10
Vertical boring and turning mills			415	2,285	6	7
Other lathes			1,078	2,484	16	21
Other metal cutting machine tools			{ 3,756	{ 3,795	{ 42	{ 44
Other metal cutting machine tools			{ ..	{ 970	{ 42	{ 44
Parts for metal cutting machine tools		14,530	..	15,775	136	168
Total metal cutting machine tools other than physico-chemical metal cutting machinery		123,287 (b)	..	132,894	..	..

Continued on next page.

TABLE 5 (continued)

Industry sub-division (a)	1963		1968			
	Quantity	Value	Quantity	Value	Enter-prises	Entries
Metal-working machine tools (excluding portable power tools, die casting machinery, rolling mills, metal manufacturing plant, and small tools for use in machine tools) (continued)		£'000	Number	£'000	Number	Number
New (continued)						
20 Metal forming machine tools, other than physico-chemical metal forming machinery complete						
Drawing, bending, and forming						
Bar, tube and section drawing and forming (c)			{ 1,464 .. }	{ 2,965 506 }	23	27
Plate and sheet bending and forming			2,872	4,969	25	27
Wire and strip drawing and working			{ 451 .. }	{ 1,772 499 }	16	20
Forging and swaging			342	1,504	12	12
Presses (including scrap metal baling presses)						
Hydraulic						
Open front			866	1,695	17	17
Straight sided			146	875	6	6
Extrusion			20	655	*	*
Other			404	2,034	30	31
Mechanical		(d)				
Open front			1,685	2,946	18	19
Straight sided			270	3,855	12	12
Other			{ 2,340 .. }	{ 1,278 159 }	23	24
Pneumatic			{ 112 .. }	{ 91 45 }	9	9
Punching and shearing			841	2,446	21	23
Rivetting			..	593	5	5
Wire rope making (e)			{ 52 .. }	{ 544 218 }	7	7
Other metal forming machine tools			{ 405 .. }	{ 688 886 }	30	31
Parts for metal forming machine tools			..	4,473	85	96
Total metal forming machine tools other than physico-chemical metal forming machinery		(d)		35,698	..	..

TABLE 5 (continued)

Industry sub-division (a)	1963		1968				
	Quantity	Value	Quantity	Value	Enter-prises	Entries	
Metal-working machine tools (excluding portable power tools, die casting machinery, rolling mills, metal manufacturing plant, and small tools for use in machine tools) (continued)							
New (continued)							
30 Welding and flame cutting machines and equipment (other than welding electrodes and rods) (f)							
Electric							
Complete							
Arc welding	10,846	2,377	..	6,141	17	21	
Resistance welding							
Spot and projection	{ 3,073 .. }	{ 1,169 1,794 }	{ 4,916 .. }	{ 2,514 1,188 }	19	19	
Other	{ 1,530 .. }	{ 1,337 528 }	1,011	1,465	17	17	
Other (including stud) welding	..	(c)	..	570	*	*	
Parts	..	1,295	..	3,622	30	34	
Gas cutting and welding machines (including welding and cutting torches)							
Complete	..	1,345	..	1,703	12	14	
Parts	..	630	..	3,473	14	18	
Other welding and flame cutting machines							
Complete	..	1,563	..	1,008	13	13	
Parts	..	338	..	884	11	11	
30 Welding electrodes (other than carbon and graphite) and welding rods							
Manual electrodes for metal arc welding (coated or cored with flux material)			Th.cwt.	Th.ft.			
Ferrous			{ 280 98 .. }	{ 305,351 .. 616,463 .. }	{ 1,478 857 3,642 2,267 }	12	14
Non-ferrous	..	10,761	{ 23 .. }	{ .. 19,484 .. }	{ 1,570 599 374 }	15	17
Automatic and semi-automatic consumables							
Wires of all sizes and types			..	1,413	6	8	
Fluxes of all types			..	685	7	9	
Total welding and flame cutting equipment		23,137		35,453	..	..

Continued on next page.

TABLE 5 (continued)

Industry sub-division (a)	1963		1968			
	Quantity	Value	Quantity	Value	Enter-prises	Entries
Metal-working machine tools (excluding portable power tools, die casting machinery, rolling mills, metal manufacturing plant, and small tools for use in machine tools) (continued)		£'000	Number	£'000	Number	Number
New (continued)						
40 Physico-chemical metal cutting and forming machinery						
Complete machines	}	(c)	457	616	6	6
Parts			..	74	8	8
40 Metal-working machine tools and parts, reconditioned	..	3,808	..	4,017	53	65
Other products	..	113	..	142	7	7
Waste products						
Scrap metals	Th.tons		Th.tons			
Iron and steel	}	26.3	17.9	139	} 81	106
		..	69	..			62
Brass	0.3	40	0.4	114	47	53
Copper	..	14	0.1	41	} 28	32
	..	..	..	7		
Other scrap metals	..	30	..	36	41	50
Other waste products	..	5	..	10	12	12
Metal working machine tools erected and installed	..	449	..	1,201	*	*
Total		151,111		210,505	..	..
Sales in other industries (see Table 6)		22,234		26,595	..	..
Principal products of this industry sold by establishments in the industry		128,877		183,909	205	269(g)

- (a) The number given is that of the sub-division of which the item is a characteristic product. The sales shown are total sales by larger establishments, not merely sales by establishments classified to the sub-division.
- (b) Including metal forming machine tools except bar tube and section drawing and forming machines and wire rope-making machines, complete and parts.
- (c) Not separately recorded for 1963.
- (d) Included with metal cutting machine tools for 1963.
- (e) Wire rope making machines were not recorded separately for 1963 and are included in the 1963 figures for wire weaving and wire coil machinery in the 1968 report on Miscellaneous (non-electrical) machinery (Part 63).
- (f) Tube welding machinery was not recorded separately for 1963 and is included in the 1963 figures for steel and non-ferrous metal rolling mills, etc, in the 1968 report on Miscellaneous (non-electrical) machinery (Part 63).
- (g) 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)
	Quantity	Value	Quantity	Value	Entries	
Metal-working machine tools (excluding portable power tools, die casting machinery, rolling mills, metal manufacturing plant, and small tools for use in machine tools)		£'000	Number	£'000	Number	
New						
Metal cutting machine tools, other than physico-chemical metal cutting machinery complete						
Boring			..	148	6	66,87,88
Drilling						
Vertical			2,401	645	8	52,55,63,87
Other (including radial)			..	153	8	54,59,63,87
Gear making and finishing			..	173	6	66,68,88
Grinding						
Cylindrical external			26	289	*	54,87
Surface			79	61	5	66,71
Other			{ 674	347	} 15	63,64,66,87
			..	236		
Honing and lapping			..	262	8	63,66,82,87
Milling, planing shaping and slotting machines	..	9,782	..	1,128	13	59,63,64,66
Sawing and cutting off			..	149	14	59,63,66,87
Screwing and threading			165	438	*	63,66,81,87
Transfer and single station machines (ie unit construction machines)			375	402	9	57,62,63,87
Turning						
Capstan and turret lathes			62	194	5	53,71,87,90
Other lathes (including automatics and vertical boring and turning mills)			..	741	9	45,54,63,66
Other metal cutting machine tools			{ 278	777	} 19	49,63,80,87
			..	408		
Parts for metal cutting machine tools	..	2,154	..	1,660	49	(b)
Total metal cutting machine tools other than physico-chemical metal cutting machinery		11,936(c)		8,210	..	

Continued on next page.

TABLE 6 (continued)

	1963		1968			
	Quantity	Value	Quantity	Value	Entries	Principal industries in which produced (a)
		£'000	Number	£'000	Number	
Metal-working machine tools (excluding portable power tools, die casting machinery, rolling mills, metal manufacturing plant, and small tools for use in machine tools) (continued)						
New (continued)						
Metal forming machine tools, other than physico-chemical metal forming machinery complete						
Drawing, bending and forming						
Bar, tube and section drawing and forming			{ 61	1,235	} 11	46,52,64,87
			{ ..	506		
Plate and sheet bending and forming			813	681	6	45,46,63,64
Wire and strip drawing and working			..	554	8	54,55,63,65
Presses (including scrap metal baling presses)						
Hydraulic						
Open front			141	235	8	57,63,64,82
Straight sided						
Extrusion			{ ..	579	} 19	55,56,63,64
Other		(d)				
Mechanical						
Open front			490	368	6	58,64
Straight sided						
Other			{ ..	812	} 11	58,63,97
Pneumatic			{ 109	80		
			{ ..	38	*	63,87
Punching and shearing			124	511	8	45,63,64,151
Wire rope making			..	225	*	54,63
Other metal forming machine tools			{ 221	224	} 22	54,63,87,90
			{ ..	503		
Parts for metal forming machine tools			..	839	49	58,63,64,66
Total metal forming machine tools other than physico-chemical metal forming machinery		(d)		7,390	..	
Welding and flame cutting machines and equipment (other than welding electrodes and rods)						
Electric						
Complete						
Arc welding			..	1,262	10	55,63,71,77
Resistance welding						
Spot and projection			{ ..	631	} 7	63,71,87,93
Other		2,639	523	198			8	63,69,87
Other (including stud welding)			..	570	*	70,77
Parts			..	2,141	19	71,74,79,93

TABLE 6 (continued)

	1963		1968			
	Quantity	Value	Quantity	Value	Entries	Principal industries in which produced (a)
		£'000		£'000	Number	
Metal-working machine tools (excluding portable power tools, die casting machinery, rolling mills, metal manufacturing plant, and small tools for use in machine tools) (continued)						
New (continued)						
Welding and flame cutting machines and equipment (other than welding electrodes and rods) (continued)						
Gas cutting and welding machines (including welding and cutting torches) complete and parts	..	1,070	..	1,675	9	63,64,79,97
Other welding and flame cutting machines, complete and parts	..	970	..	805	12	64,71,84,97
Welding electrodes (other than carbon and graphite) and welding rods						
Manual electrodes for metal arc welding (coating or cored with flux material)						
Ferrous						
Non-ferrous	..	5,067	{ ..	1,682	} 10	63,77,87,93
Automatic and semi-automatic consumables						
Wires of all sizes and types			{ ..	315	} *	63,67
Fluxes of all types						
Total welding and flame cutting equipment		9,747		9,280	..	
Physico-chemical metal cutting and forming machinery parts	..	-				
Metal-working machine tools and parts, reconditioned	..	464	{ ..	1,715	} 23	
Metal-working machine tools erected and installed	..	88				
Total		22,234		26,595	..	

- (a) The references given are to the list of industries at the front of this report.
(b) Production is widely distributed.
(c) Including metal forming machine tools, complete and parts.
(d) Included with metal cutting machine tools 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 £'000	Value £'000
Pumps, valves, compressors, etc		
Fluid power equipment; pumps and motors, control and ancillary valves	1,092	204
Other, complete and parts		273
Textile machinery, complete and parts	1,508	1,143
Mechanical handling equipment		
Conveyors, feeders and elevators, including skip hoists, complete and parts (excluding agricultural)	418	412
Other, complete and parts		228
Mining machinery, complete and parts		71
Printing and bookbinding machinery, complete and parts		209
Refrigerating machinery		71
Miscellaneous (non-electrical) machinery		
Founding and die casting machinery, complete and parts	6,187	318
Woodworking machinery; new, complete and parts		116
Glassmaking and glass working machinery, complete and parts		45
Other miscellaneous (non-electrical) machinery		2,439
Industrial plant and steelwork		
Metal works plant		426
Other plant	754	1,033
Other fabricated constructional iron and steelwork		113
Other fabricated iron and steelwork		346
Arms, ammunition and naval, military and air force stores, complete and parts	1,761	524
Other mechanical engineering products, complete and parts		
Electrical machinery, complete and parts	202	331
Motor vehicles, complete and parts, and accessories	322	136
Engineers' small tools and gauges, and hand tools, and implements		
Jigs and fixtures	693	387
Press tools	765	714
Moulds and dies (including moulds and dies for plastics)	90	278
Other tools and implements	8,686	6,274
Miscellaneous metal manufactures	411	884
Scientific and industrial instruments and systems		497
Other products	1,667	1,560
Work done		
Building work done and installation of air conditioning, heating and ventilating and other installation (a)		
Work done as main and sub-contractors		199
Other installation work	75	77

TABLE 7 (continued)

	1963	1968
	Value £'000	Value £'000
Work done (continued)		
General mechanical engineering		
Repair and jobbing work	1,454	1,578
Other work done on commission, etc	1,609	1,000
Research and development work done for customers, including Government Departments, for which payment is receivable	99	139
Services rendered to other organisations (b)	710	528
Total value of goods sold without having been subjected to any manufacturing process (merchanted or factored)	29,633	29,210
Canteen takings	531	491
Total	58,667	52,255

(a) The data shown for 1963 is not comparable with that for 1968. Because of a change in the method of collection, the data for 1968 includes goods made by firms and incorporated in their building and civil engineering work whereas the data for 1963 excludes such goods. For 1963 the value of goods made and used in building and civil engineering work amounting to £120,000 has been deducted from the gross figure for building and civil engineering (£171,000) in order to avoid duplication which arises because they have been included against the appropriate sales headings elsewhere in the Report. For 1968 duplication does not arise since goods made and used in building and civil engineering work were not shown additionally as sales elsewhere in the Report; owing to the risk of disclosure of information relating to individual firms, the estimated value of these goods cannot be given.

(b) 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
Materials for use in production	Th.tons	£'000	Th.tons	£'000
Iron				
Pig iron, including refined pig iron and other irons for re-melting	11.8	304	7.7	277
	..	101		
Castings	80.5	7,151	78.1	9,420
	..	954	..	1,269
Steel				
Ingots, blooms, billets, slabs (including sheet/plate mill slabs and sheet bars)	5.0	281	2.3	181
			..	87
Bars and rods (including wire rods), angles, shapes and sections, girders, beams, joists and pillars rolled (not fabricated), including tube rounds and squares	54.3	3,649	90.2	6,437
	..	688		
Plates, 3mm. thick and over	24.6	1,255	37.3	2,209
Sheets under 3mm. thick (including electrical sheets)	2.4	194	5.3	536
	..	26		
Hoop and strip (including tape of all thicknesses)	..	13	..	56
Forgings (except drop forgings)	12.8	1,030	7.4	1,212
Castings	16.5	1,135	5.6	962
			..	176
Drop forgings	0.7	149	..	251
	..	75		
Iron and steel not elsewhere specified except finished parts, wire and scrap				
Wrought tubes and fittings for wrought tubes (including welded, seamless, conduits, etc)	0.9	100	1.7	214
	..	55	..	115
Other	1.4	179	1.7	273
	..	353	..	47
Precision chain (eg transmission and timing)	..	91	..	183
Springs, laminated and other types	..	102	..	167
Steel wire and wire manufactures (excluding insulated wires and cables)				
Wire (single wire)	..	425	..	847
Wire manufactures (including wire cables and ropes and stranded wire of two or more ply)	..	(a)	..	531
Ferro-alloys	..	421	..	337
Iron and steel scrap	..	105	..	84
Light metals and non-ferrous metals in all forms except finished parts, wire and scrap				
Aluminium and aluminium alloys	0.9	365	1.5	710
	..	158	..	140
Brass and other copper alloys (including nickel silver and cupro nickel, but excluding all other nickel alloys and cadmium copper) (b)	1.9	755	2.4	1,360
	..	289	..	152
Copper (including cadmium copper) (c)	0.5	205	1.2	799
	..	23		
Lead and alloys of lead (excluding solder)	..	(a)	0.3	51
Zinc and alloys of zinc	..		..	12
Solder, soft	..	17	..	14
Non-ferrous metal wire (single wire, not insulated)	..	216	..	425
Glass in all forms (including finished parts)	..	75	..	19

TABLE 10 (continued)

	1963		1968	
	Quantity	Cost	Quantity	Cost
Materials for use in production (continued)		£'000		£'000
Metal powders	..	284	..	223
General chemicals (d)				
Inorganic (including inorganic gases)	..		..	317
Organic (including organic gases)	..	367	..	89
Other (eg mixtures of inorganic and organic chemicals)	..		..	424
			Th.gal.	
			179	311
Paint and varnish (including lacquers and stains)	..	297	..	62
Synthetic resins and plastics materials (excluding leathercloth and reinforced plastics)	..	41	..	69
Refractory materials	..	72	..	41
Manufactures wholly or mainly of rubber (including synthetic rubber), balata and gutta-percha, including sheeting, but excluding replacement parts for your own machinery, plant, vehicles, etc	..	154	..	266
Timber	Th.stds.		Th.stds.	
Softwood, sawn or planed but not further prepared or manufactured	0.5	79	0.4	64
	..	28	..	17
	Th.cu.ft.		Th.cu.ft.	
Hardwood, sawn or planed, but not further prepared or manufactured	28.8	14	29.4	22
	..	28	..	4
			Th.sq.ft.	
Plywood, including blockboard, laminboard and battenboard	..	17	115	9
			..	9
Asbestos in all forms (including finished parts)	..	12	..	26
Other thermal insulating materials	..	18	..	20
Insulated wires, cables, strips and strands	..	250	..	535
Bolts, rivets, nuts and washers, screws, nails, tacks, etc	..	816	..	1,055
Machinery and plant bought for installation and erection	..	499	..	1,279
Purchased components for incorporation in your own products				
Ball and roller bearings and parts thereof	..	1,515	..	1,727
Electric motors				
Of less than 1 h.p.	..	410	..	855
Of 1 h.p. and over	..	2,349	..	2,830
			Number	
Internal combustion engines	..	101	1,264	286
Industrial valves	..	324	..	1,238
Gears and gear wheels of metal	..	632	..	910
Pumps	..	695	..	1,144
Measuring instruments and gauges and parts				
Industrial process measuring and control instruments and equipment	..	698	..	2,139
Other	..	100	..	770
Plastic goods moulded and fabricated	..	69	..	188
Other components not elsewhere specified (excluding those of rubber and asbestos)	..	10,627	..	22,875

Continued on next page.

TABLE 10 (continued)

	1963		1968	
	Quantity	Cost	Quantity	Cost
Materials for use in production (continued)		£'000		£'000
Purchased second-hand machinery for reconditioning	..	1,041	..	882
	Th.gal.		Th.gal.	
			1,060	264
Lubricating oils and greases (including cutting oils and emulsions)	{ 471	{ 151	{ Th.cwt.	{ 9
	..	84	1.1	45
			..	
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	{ ..	{ 2,101	{ ..	{ 102
Other			..	2,448
All other materials for use in production	..	6,557	..	6,588
Packaging materials				
Paper and board				
Boxes, cartons, drums and canisters (with or without metal ends) of paper and cardboard	{ ..	{ 151	{ ..	{ 249
Fibreboard packing cases			..	60
Wrapping and packing paper (including paper coated with plastics and any laminates incorporating paper but not metal)			..	59
Other packaging materials of paper and paperboard (including moulded pulp units and labels, but excluding bags, multiwall paper sacks and paper and board for converting into packaging materials)	{ ..	{ 83	{ ..	{ 31
Timber				
Containers wholly or mainly of wood (including plywood boxes and drums), baskets and wickerwork crates	..	470	..	399
	Th.cu.ft.		Th.cu.ft.	
Timber (sawn or planed) for manufacture into packing cases, etc	{ 243	{ 116	{ 195	{ 137
	..	46	..	47
Other wood products for packaging (including wood wool, but excluding plywood for manufacture into packing cases)	..	(e)	..	17
Packaging materials of metal (other than aluminium) including crown corks, wire, foil and any laminates incorporating foil, foil labels and closures, tensional steel strappings, etc, but excluding cans, boxes, barrels, kegs and drums	..	(e)	..	18
All other packaging materials	..	84	..	161
Fuel and electricity (f)	Th.tons		Th.tons	
Coal	{ 36.4	{ 216	{ 19.8	{ 134
	..	63		
Coke (including screenings) and manufactured fuel	{ 14.1	{ 126	{ 11.0	{ 111
	..	38	..	27
	Th.gal.		Th.gal.	
Derv fuel and motor spirit for use in road vehicles	{ 820	{ 180	{ 1,155	{ 336
	..	39	..	55
Other liquid fuels (including creosote/pitch mixtures, etc and liquefied petroleum gases)	9,029	425	8,172	482
	Th.therms		Th.therms	
Gas	{ 4,096	{ 312	{ 3,931	{ 390
	..	95	..	97

TABLE 10 (continued)

	1963		1968	
	Quantity	Cost	Quantity	Cost
Fuel and electricity (f) (continued)	Th.kWh	£'000	Th.kWh	£'000
Electricity	{ 161,930	{ 1,088	{ 195,875	{ 1,684
	..	360	..	332
All other fuels	..	(g)	..	216
Total cost of materials and fuel		55,260		84,739
Goods purchased for merchandising		24,728		21,190
Canteen purchases		540		552
Total cost of purchases		80,528		106,481

(a) Included in 'All other materials for use in production' in 1963.

(b) Cadmium copper was not specifically excluded for 1963.

(c) Blister was specifically excluded for 1963.

(d) Described as 'Heavy Chemicals' for 1963.

(e) Included in 'All other packaging materials' for 1963.

(f) Owing to the risk of disclosure of information relating to individual firms, total quantities of electricity generated in firms' own establishments in 1968 and 1963 cannot be given.

(g) Not recorded separately for 1963.

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.	491	485
Transport costs			
Wages and salaries	£'000	359	519
Derv fuel and motor spirit	"	220	391
Tyres and other spare parts for road goods vehicles	"	..	102
Payments to other organisations for transport	{ by road	1,196	1,227
	{ by rail and other means excluding postal services		
	"		
Costs of operating road goods vehicles			
Insurance	"	29	49
Vehicle licences	"	24	57
Depreciation	"	136	241
Payments to other organisations for repairs and maintenance	"	93	128
Total	"	2,057(a)	3,014

(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	419	509
Road goods vehicles	93	128
Plant, machinery and other capital equipment	585	904
Insurance, licensing and depreciation of road goods vehicles (b)	189	347
Rates, excluding water rates	1,124	1,766
Hire of plant and machinery	220	384
Postage, telephone, telegrams, cables and telex (c)	689	1,327
Total	3,319	5,365

(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)	1.9	1.0
May	1.5	1.0
June	4.5	1.9
July	3.0	3.5
August	1.9	2.1
September	13.8	19.7
October	6.3	15.0
November	3.3	2.3
December	34.6	29.8
1969		
January	2.2	1.2
February	1.1	0.3
March	23.4	20.9
April (b)	2.6	1.3
	100	100

(a) From 6 April.

(b) To 5 April.