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Business Monitor

A publication of the Government Statistical Service

Report on the Census of Production

Metal-working machine tools



HMSO

Department of Industry
Business Statistics Office

PA332

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A publication of the Government Statistical Service

Report on the Census of Production 1973

Metal-working machine tools

Presented by the Secretary of State for Industry
to Parliament in pursuance of the Statistics of Trade Act 1947
(10 & 11 Geo.6 Cha.39 sec 7)

Department of Industry
Business Statistics Office

London: Her Majesty's Stationery Office

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PA332 METAL-WORKING MACHINE TOOLS

PA332 1

The information in this report relates to establishments classified to the Metal-working machine tools industry, minimum list heading 332 in the Standard Industrial Classification (revised 1968). The activities of the industry include:-

Manufacturing 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; physio-chemical process cutting and forming machines including equipment for high energy rate forming, electro-chemical 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.

In interpreting the data in the tables it is essential to bear in mind the notes and definitions which commence on page (iii).

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TABLE 1

PA332 2

Output and costs, 1970, 1971, 1972 and 1973
All United Kingdom establishments classified to the industry (a)

	Unit	1970	1971	1972	1973
Enterprises (b)	Number	628	615	461	775
Establishments (b)	"	687	700	514	826
Sales of goods produced, work done and industrial services rendered (c)	£'000	307,253	293,390	240,453	304,747
Capital goods produced for establishments' own use (d)	"				
Non-industrial services rendered (e)	"				
Goods merchanted or factored	"	28,934	24,077	20,066	35,878
Total sales and work done (c) (e)	"	336,187	317,467	260,519	342,746
Increase during the year, work in progress and goods on hand for sale	"	16,753	-1,033	-5,251	8,876
Gross output (c) (e)	"	352,940	316,433	255,268	351,622
Purchases of materials for use in production, and packaging and fuel (d)	"	166,942	144,890	113,417	134,001
Purchases of goods for merchenting or factoring (d)	"				
Increase during the year, stocks of materials, stores and fuel	"	7,766	795	-1,707	10,050
Cost of industrial services received (f)	"	11,831	8,978	5,747	10,487
Net output (g)	"	181,932	163,360	134,397	189,142
Total employment (h)	Thousands	77.3	70.2	54.1	58.8
Net output per head (g)	£	2,353	2,327	2,484	3,218
Payments for non-industrial services (j)					
Rents, hire of plant, machinery and vehicles	£'000	..	..	..	2,219
Commercial insurance premiums	"				
Bank charges	"				
Other non-industrial services	"				
Licensing of motor vehicles (k)	"				107
Rates, excluding water rates (k)	"				2,642
Gross value added at factor cost	"				170,512
Gross value added at factor cost per head	£				2,901

- (a) For 1973, estimates for establishments not making satisfactory returns and for establishments employing less than 20 persons accounted for 24 per cent of the total figures in which they were incorporated: of this unsatisfactory returns accounted for 17 per cent.
- (b) Increase from 1972 to 1973 is largely attributable to improved estimates of the number of establishments with less than 20 employees - see notes on page (iii).
- (c) The figures for 1970-1972 do not include receipts for repairs and maintenance.
- (d) Not recorded separately for 1970-1972.
- (e) The figures for 1970-1972 do not include revenue from rents for industrial buildings.
- (f) The figures for 1970-1972 exclude the amounts payable for repairs and maintenance.
- (g) The definition of net output used in previous census reports provided for the deduction of amounts payable to other organisations for transport of goods within the United Kingdom. The net output and net output per head figures on that basis were:-

Year	Net output £'000	Net output per head £
1970	179,254	2,320
1971	160,648	2,288
1972	131,899	2,437

Additionally, the figures for 1970-1972 do not reflect revenue from rents or amounts payable for repairs and maintenance (see footnotes e and f).

- (h) Average number employed (full and part-time; see table 7) during the year (including working proprietors) by the establishment.
- (j) Not collected for 1970-1972 except for amounts payable to other organisations for transport of goods within the United Kingdom.
- (k) Not collected for 1970-1972.

TABLE 2

PA332 3

Capital expenditure, 1970, 1971, 1972 and 1973
All United Kingdom establishments classified to the industry (a)(b)

	£'000			
	1970	1971	1972	1973
Land and buildings				
New building work	2,837	2,336	1,262	888
Land and existing buildings				
Acquisitions	1,358	320	496	372
Disposals	3,470	813	1,907	1,858
Vehicles				
Acquisitions				
Motor cars (c)	1,496	1,298	1,070	1,264
Other vehicles (c)				
Disposals				
Motor cars (c)	525	599	454	467
Other vehicles (c)				
Plant and machinery				
Acquisitions	10,436	8,774	6,534	8,166
Disposals	1,281	1,421	1,207	1,128
Total net capital expenditure (d)	10,850	9,896	5,794	7,367

- (a) Including estimates for establishments not making satisfactory returns and for establishments exempted by virtue of size.
- (b) Capital expenditure in respect of manufacturing establishments where production had not commenced before the end of the year, is included.
- (c) Not recorded separately for 1970-1972.
- (d) New building work plus acquisitions less disposals of land and existing buildings, vehicles and plant and machinery.

TABLE 3

Stocks and work in progress, 1970, 1971, 1972 and 1973
All United Kingdom establishments classified to the industry (a)

	£'000				
	1970	1971	1972	1973	
	Increase				Value at end of year
Materials, stores and fuel	7,766	795	-1,707	10,050	46,195
Work in progress	14,604	-3,510	-3,614	10,768	69,206
Goods on hand for sale	2,149	2,477	-1,637	-1,893	16,338
Total	24,519	-238	-6,958	18,926	131,739

- (a) Including estimates for establishments not making satisfactory returns and for establishments exempted by virtue of size.

TABLE 4

PA332 4

Analysis of establishments by size, 1973

All United Kingdom establishments classified to the industry (a)

Size group (b)	Estab-lish-ments	Enter-prises (c)	Employment			Wages and salaries (e)			
			Total (b)	Opera-tives	Others (d)	Operatives		Others (d)	
						Total	per head	Total	per head
Number	Number	Number	Number	Number	£'000	£	£'000	£	
1 - 10	400	398	2,073	7,388	2,942	12,310	1,666	6,194	2,105
11 - 19	160	159	2,300						
20 - 49	88	85	2,672						
50 - 99	54	54	3,709						
100 - 199	45	41	6,405	4,303	2,091	7,279	1,692	4,268	2,041
200 - 299	31	28	7,492	4,938	2,554	8,665	1,755	5,418	2,121
300 - 399	15	14	5,398	3,528	1,870	6,553	1,858	3,623	1,937
400 - 499	8	7	3,629	2,458	1,167	4,166	1,695	2,292	1,964
500 - 999	18	15	12,174	7,772	4,402	13,952	1,795	8,850	2,011
1,000 and over	7	7	12,920	8,364	4,556	14,889	1,780	9,815	2,154
Total	826	775	58,772	38,751	19,582	67,815	1,750	40,461	2,066

- (a) Including estimates for establishments not making satisfactory returns and for establishments exempted by virtue of size.
- (b) Average number employed (full and part-time; see table 7) during the year (including working proprietors) by the establishment.
- (c) Some enterprises control establishments in more than one size group: the sum of the figures for the size groups therefore exceeds the total for the industry.
- (d) Administrative, technical and clerical employees.

1071
146
218

PA332 5

Total sales and work done (f)	Gross output	Net output		Gross value added at factor cost		Net capital expenditure (g)	Total stocks and work in progress at end of year
		Total	per head	Total	per head		
£'000	£'000	£'000	£	£'000	£	£'000	£'000
57,478	58,698	31,730	2,950	(h)	(h)	1,841	15,452
36,695	37,881	19,492	3,043	47,200(h)	2,751 (h)	1,056	10,461
47,652	48,034	23,714	3,165	21,200	2,830	937	14,671
34,249	35,311	18,155	3,363	16,106	2,984	1,360	13,268
20,740	21,616	11,039	3,042	9,810	2,703	617	7,955
65,631	68,778	38,734	3,182	34,929	2,869	176	33,636
80,301	81,304	46,278	3,582	41,268	3,194	1,380	36,296
342,746	351,622	189,142	3,218	170,512	2,901	7,367	131,739

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- (e) Another important component of labour costs, employers' national insurance contributions, graduated pensions, contributions to other pensions and welfare schemes and the running costs of canteens, is estimated for the industry at £9,791 thousand. In addition, for 1973 the remuneration to outworkers on returns received was £26 thousand.
- (f) Comprises sales of goods produced (including capital goods manufactured, buildings constructed by establishments for their own use), work done, industrial and non-industrial services rendered, goods merchanted or factored.
- (g) New building work plus acquisitions less disposals of land and existing buildings, vehicles and plant and machinery.
- (h) Gross value added relates to establishments employing 1 - 199 persons.

TABLE 5

PA332 6

Regional distribution of employment, net capital expenditure and net output, 1973
All United Kingdom establishments classified to the industry (a)

Area	Employment (b)		Net capital expenditure (c)				Net output and employment in the region of establishments with more than 80 per cent of their employment in the region (e)		
	Thousands	per cent of United Kingdom	£'000	per cent of United Kingdom	£'000	£'000	£'000	Average number employed as a percentage of total average number employed in the industry in the region	Net output as a percentage of total of the industry in the United Kingdom
Standard regions of England									
North	3.2	5.5	302	4.1	1	301	7,345	72.0	3.9
Yorkshire and Humberside	8.1	13.8	1,413	19.2	*	*	15,323	69.5	8.1
East Midlands	5.5	9.4	*	*	*	*	9,864	60.1	5.2
East Anglia	1.7	2.9	*	*	*	*	1,228	29.1	0.6
South East	14.2	24.2	2,881	39.1	22	2,859	25,958	57.0	13.7
South West	2.1	3.5	*	*	*	*	5,142	76.3	2.7
West Midlands	17.0	28.9	1,074	14.6	*	*	43,599	81.6	23.1
North West	3.6	6.2	434	5.9	*	*	10,420	82.1	5.5
England	55.5	94.3	6,979	94.7	*	*	118,878	69.0	62.9
Wales	0.9	1.5	*	*	*	*	1,308	76.5	0.7
Scotland	2.4	4.1	*	*	*	*	5,444	68.6	2.9
Great Britain	58.8	100.0	7,367	100.0	-1,486	8,853	125,631	69.1	66.4
Northern Ireland	-	-	-	-	-	-	-	-	-
Unallocated (a) (f)	-	-	-	-	-	-	63,511	-	33.6
United Kingdom	58.8	100.0	7,367	100.0	-1,486	8,853	189,142		100.0

(a) Including estimates for establishments not making satisfactory returns and for establishments exempted by virtue of size.

(b) Average number employed (full and part-time; see table 7) during the year (including working proprietors).

(c) New building work plus acquisitions less disposals of land and existing buildings, vehicles and plant and machinery.

(d) Acquisitions less disposals.

(e) Where a census return covered addresses in two or more regions an estimate was made of the net output attributable to the region only where more than 80 per cent of the establishment's employees were located in the region. The estimate was made by assuming that net output at each address covered by a return was proportionate to employment at the address. The establishment's residual net output was included in unallocated net output.

(f) Includes unallocated net output of establishments covering addresses in two or more regions.

TABLE 6

PA332 7

Percentage analysis of twelve-month periods covered by returns received from United Kingdom establishments employing 20 or more persons, 1973

Accounting year ended	Percentage of total returns received	Percentage of total number employed
	per cent	per cent
1973 April (a)	1.1	0.1
May	2.2	1.1
June	4.9	2.2
July	1.6	0.8
August	1.6	0.3
September	13.0	16.9
October	4.3	14.5
November	4.9	5.9
December	40.0	36.7
1974 January	1.1	0.9
February	0.5	0.1
March (b)	24.8	20.5
	100.0	100.0

(a) From 6th April.

(b) Including returns made for twelve-month period ended 1st to 5th April 1974.

TABLE 7

Percentage analysis of employees, by full and part-time employment and sex, 1973 (a)

Sex	Full-time	Part-time	All employees
	per cent	per cent	per cent
Male	85	1	86
Female	11	3	14
	96	4	100

Source: Department of Employment

(a) The percentages relate to the numbers employed (excluding working proprietors) in the United Kingdom at mid-June, 1973.

TABLE 8

PA332 8

Sales of principal products of the industry by establishments employing 25 or more persons, including sales by establishments classified to other industries, 1973 (a)

	Quantity	Value
	Number	£'000
Complete numerically controlled (nc) machine tools (excluding sequence or programme (plugboard) controlled):		
Drilling (excluding multi-function) with positioning control system:		
Turret head	41	1,007
Other	51	1,145
Boring (excluding multi-function) with positioning control system	31	880
Milling and routing (excluding multi-function) with line-motion or contouring control system	20	1,279
Multi-function (drilling and/or milling and/or boring) with line-motion or contouring control system:		
Manual tool change:		
Horizontal	47	1,887
Vertical	} 131	2,489
Indexing turret		
Machining centres (automatic tool change):		
Horizontal	} 67	2,402
Vertical		
Turning (including turning centres) with line-motion or contouring control system	51	1,566
Other nc machine tools	23	640
Total nc machine tools	..	13,295
Complete non-nc metal-cutting machine tools:		
Boring machines:		
Fine	65	1,018
Horizontal	166	4,890
Other (including jig, vertical spindle, transportable and deep hole; but excluding vertical boring and turning mills/lathes)	152	696
Broaching machines (including horizontal, vertical)	86	1,463
Total non-nc boring machines	..	8,067
Drilling machines:		
Vertical:		
Bench mounted	5,976	777
Floor mounted (single and multi-spindle) and multi-spindle head (with the spindles in each head driven from a common source; excluding unit heads)	3,804	2,307
Radial	670	1,652
Other (including turret head, double column traversing, horizontal, deep hole, centring and ending)	123	813
Total non-nc drilling machines	..	5,549
Gear making and gear finishing machines:		
Gear cutting and generating (including gear hobbing, gear planing, gear shaping and bevel gear cutting)	290	2,736
Gear finishing (including gear grinding, gear lapping and honing and gear rolling)	85	825
Total non-nc gear making and finishing machines	..	3,561

TABLE 8 (continued)

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	Quantity	Value
	Number	£'000
Complete non-nc metal-cutting machine tools: (continued)		
Grinding machines:		
Cylindrical:		
External (including plunge cut and angular head):		
Plain	533	3,248
Centreless	125	1,298
Universal	371	1,711
Other (including roll and crankshaft)	264	3,220
Internal (including plain, centreless and planetary spindle)	70	746
Surface:		
Reciprocating table (horizontal and vertical spindle)	1,734	4,156
Other (including rotary table, disc, duplex and slideway)	227	2,010
Tool and cutter (special and general purpose; including saw, hob, broach, face milling cutter and tap and twist drill making, tap and twist drill sharpening)	} 4,629	2,297
Non-precision (including polishing, buffing and finishing, rough and abrasive)		
Other (including cam-shaft, cam, spline, jig, profile, swing frame, billet, cone centre and rack track; but excluding thread grinding, gear grinding and electrolytic grinding)	277	1,958
Honing and lapping (including super finishing) machines	635	1,695
Total non-nc grinding, sharpening and honing machine tools	..	22,339
Milling machines:		
Knee and column:		
Horizontal	1,237	3,721
Vertical	3,414	6,247
Bed type	243	2,913
Die sinking, copying, contouring and profiling (excluding ordinary milling machines with tracer attachments)	217	786
Other (including sequence or programme (plugboard) controlled, bench and hand, plano-milling, key seating, routing, spar, spline, engraving, cam end, flute and slot; but excluding thread milling)	154	758
Total non-nc milling machines	..	14,425
Planing, shaping and slotting machines (including combined planing and milling, plate edge, rail, key seating and slotting; but excluding plano-millers)	558	655
Sawing and cutting-off machines (including band sawing/filing, circular sawing for cold or hot metal, hack sawing, friction, jig and abrasive)	6,260	2,862
Screwing and threading machines (including thread milling, thread rolling, tapping, single point chasing, whirling and thread grinding, bolt and/or tube (using die head), but excluding automatic lathes for screw manufacture)	457	2,888
Turning machines:		
Centre lathes:		
General purpose:		
Up to and including 300 mm diameter	6,510	2,984
301 mm to 500 mm diameter	6,382	9,449
501 mm diameter and over	603	3,260
Other (including tool room and precision type, relieving, multi-tool and production, bench and break or gap bed)	198	1,223

TABLE 8 (continued)

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	Quantity	Value
	Number	£'000
Complete non-nc metal-cutting machine tools: (continued)		
Turning machines: (continued)		
Automatic lathes (excluding plugboard machines):		
Single spindle:		
Bar	560	3,159
Chucking	494	5,634
Multi-spindle	545	9,947
Sequence or programme (plugboard) controlled and copying (excluding lathes with copying attachments only)	(b)	(b)
Other (including surface and boring turning machines, vertical boring and turning mills/lathes, spinning, special purpose lathes, capstan and turret lathes)	2,722	13,784
Total non-nc lathes	..	49,440
Unit construction and transfer machines:		
Single station	154	1,350
Multiple station (excluding link lines which are classified to the headings applicable to their functions i.e. boring, drilling etc.)	312	8,317
Other (including unit heads with or without power feed)	401	685
Other non-nc metal-cutting machine tools (excluding punching and shearing)	111	676
Parts and accessories for metal-cutting machine tools (c)	..	20,148
Total unit construction and transfer machines, parts and accessories	..	31,176
Total non-nc metal-cutting machine tools (including parts)	..	140,962
Complete non-nc metal-forming machine tools (excluding die casting machines and rolling mills):		
Bending and forming machines:		
Bar, tube and section	6,149	1,603
Plate and sheet:		
Press brakes (hydraulic and mechanical)	277	1,713
Other (including folding machines)	1,527	2,200
Sheet metal working and forming (including sheet metal swaging)	882	1,609
Wire and strip (including winding, coiling and forming)	710	1,786
Other	419	2,727
Drawing machines and draw benches (including bar and tube draw benches and wire drawing machines)	525	4,858
Forging and swaging machines (including forging presses - hot and cold, cold heading and upsetting, forging rolls-reducers, hammers, swaging machines and tube making)	316	4,070
Presses mechanical and pneumatic (excluding forging presses, press brakes, punching and shearing):		
Mechanical:		
Open front (straight and inclinable)	1,348	3,179
Straight sided:		
Single action (including extrusion)	} 170	4,315
Multiple action (including drawing)		
Other mechanical and pneumatic (including fine blanking, knuckle and coining, transfer automatic high speed, open front pneumatic, straight sided pneumatic and mandrel type pneumatic)	1,615	3,651

TABLE 8 (continued)

PA332 11

	Quantity	Value
	Number	£'000
Complete non-nc metal-forming machine tools (excluding die casting machines and rolling mills): (continued)		
Presses hydraulic:		
Open front	964	2,229
Other (including straight sided, extrusion, fine blanking, try-out and die spotting, hydro and rubber forming, baling and powder)	258	5,761
Punching machines (including combined punching and shearing, cropping, nibbling and notching)	800	1,191
Shearing machines (excluding combined punching and shearing, but including plate and sheet shearing hydraulic, guillotine, plate and sheet shearing mechanical, single and shearing, rotary shearing, gang slitting, slab ingot and billet shearing, flying shears and scrap shearing)	2,199	7,989
Other non-nc metal-forming machine tools (including high energy rate forming, rivetting machines, but excluding chain making, container making, marking, wire rope and cable making)	2,166	1,299
Parts and accessories for metal-forming machine tools (c)	..	8,785
Total non-nc metal-forming machine tools (including parts)	..	58,965
Physico/chemical process machine tools	..	..
Parts for physico/chemical process machine tools	..	..
Gas welding and cutting equipment (including parts, welding rods and consumables)	..	..
Electric welding equipment (including parts and welding electrodes other than of carbon or graphite)	..	..
Total physico/chemical process machine tools, gas and electric welding and cutting equipment	..	50,735
Reconditioned and rebuilt machine tools	..	3,187
Waste products etc.	..	190
Work done	..	5,615
Total sales of principal products of the Metal-working machine tools industry (MLH332) and work done		272,949

Source: Business Monitor (PQ332). Quarterly Statistics

- (a) Sales are deliveries on sale for home or abroad; forward sales are excluded. Values are net selling values, value added tax (or purchase tax where previously applicable) trade discounts and commissions are excluded.
- (b) Included in following figure.
- (c) Including only parts and accessories invoiced separately as spares or replacements. Equipment and tooling supplied with the machine are included under the heading for the machine to which they are appropriate. Excluding engineers' small tools and tool work holders and parts thereof.

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 Reprographic Unit, Cardiff
 Dd. 496580 K6 Cdf 117 8/77

Notes

These notes give the main information needed for interpreting the figures in the industry Business Monitors: more detailed information about the census is given in a separate Business Monitor — PA1001 (Introductory Notes) of the Report on the Census of Production, 1973.

GENERAL INFORMATION

Changes made for 1973

The Census for 1973 was the first to be modified to bring it into line with similar inquiries being conducted in other member countries of the European Economic Communities. One modification has made possible the publication for the first time in the Annual Censuses of data on a number of additional items. These include:

- Capital goods purchased for establishments' own use (previously included with sales of goods produced etc.)
- Purchases of goods for merchanting or factoring (previously included with purchases of materials etc.)
- Payments for non-industrial services
- Licensing of motor vehicles
- Rates, excluding water rates
- Gross value added
- Amounts paid to outworkers (where applicable)
- Employers' national insurance contributions etc.

Suppression of information relating to individual undertakings.

The Statistics of Trade Act 1947 provides that — "No individual estimates or returns, and no information relating to an individual undertaking obtained under the foregoing provisions of this Act, shall, without the previous consent in writing of the person carrying on the undertaking which is the subject of the estimates, returns or information, be disclosed except—

- (a) in accordance with directions given by the Minister in charge of the government department in possession of the estimates, returns or information to a government department or to the Import Duties Advisory Committee for the purposes of the exercise by that department or committee of any of their functions; or
- (b) for the purposes of any proceedings for an offence under this Act or any report of these proceedings."

If a figure involved disclosure the contributor concerned was sometimes asked to give permission for its publication. In the majority of cases this permission was given but when it was refused and in cases where the contributors were not approached the figure has been suppressed, sometimes by combining it in some way with other figures, but sometimes — as in the regional tables by omitting the figure altogether.

Symbols used

The following symbols are used throughout the P A series of Business Monitors:

- .. not available
- nil or less than half the final digit shown
- * figures cannot be shown owing to the risk of disclosing information about individual enterprises
- R revised

Rounding of figures

Figures in the tables have, where necessary, been rounded to the nearest final digit. There may, therefore, be an apparent slight discrepancy between a sum of constituent items and a total shown.

Industrial classification

The United Kingdom Standard Industrial Classification (SIC) was first issued in 1948 and was subsequently revised in 1958 and 1968. It exists to promote uniformity and comparability in the official statistics of the United Kingdom. The general principles followed are those of the International Standard Industrial Classification of all Economic Activities of the United Nations Statistical Office but the United Kingdom SIC reflects the organisation and structure of industry and trade as it exists in the United Kingdom. The SIC is a classification by activity and is not a commodity classification. However, an index of all commodity headings for which sales data are provided in the Quarterly Business Monitors is published as PQ1000 in the Business Monitor Series.

The SIC is revised every 10 years or so and is to be revised to bring it more closely into line with the General Industrial Classification of Economic Activities within the European Communities (NACE).

Statistical units

The statistical unit for the purpose of the Census is the establishment which is defined in the SIC as the smallest unit which can provide the information normally required for an economic census, for example, employment, expenses, turnover, capital formation. Usually the principal activities carried on in an establishment fall within a single heading of the classification (e.g. steel making or sugar refining). Typically the establishment embraces all the activities carried on at a single address e.g. a farm, a mine, or a factory, including those which are ancillary to the principal activities. Frequently distinct activities characteristic of different industries are carried on at one address, but normally these are not classified separately and the whole establishment is classified according to the main activity. If, however, the required range of data can be provided for each activity, each is taken to constitute a separate establishment. Sometimes activities which are conducted as a single business are carried on at a number of addresses. Where this is so, businesses are asked to provide the full range of separate information in respect of each address, whether or not the activities are different. Their activities may, however, be integrated to such an extent that they constitute a single establishment. In that case the establishment is defined to cover the combined activities at these addresses (termed local units). Separate figures are obtained, however, of employment and net capital expenditure at each unit.

Efforts are made by the Business Statistics Office to ensure, by negotiating with respondents, that the return from an establishment does not cover local units on addresses in more than one of the countries of the United Kingdom.

Further information about the statistical unit appeared in an article "The statistical unit in business inquiries" in Statistical News No. 13 May 1971.

Establishments are asked to exclude from their returns particulars relating to any department not engaged in production e.g. merchanting, transport, warehousing, for which they keep a separate set of accounts. Transfers of goods produced to such departments are treated as sales and respondents are asked to value them as far as possible as if sold to an independent purchaser. Where separate accounts are not kept they are asked to include details of all these activities in their return.

Particulars relating to head offices, which were mainly engaged in the administration of the production units within the scope of the census were included. Where more than one return was made the information in respect of the head office was apportioned among them.

For certain purposes in the annual censuses of production (especially the enterprise analyses of Business Monitor PA 1002) related establishments are combined. For these purposes an enterprise group is defined as a business consisting of either a single establishment, or of two or more establishments under common ownership or control. The bringing together of establishments into enterprise groups is also necessary for the purpose of ensuring that there will be no disclosure of the activities of any one enterprise group. Information about the relationship of establishments, the changing structure of groups of companies and about common ownership links is obtained from many sources, including the Stock Exchange Year Book, company reports, press reports and information supplied by individual establishments.

THE REGISTER

The register permits a questionnaire to be sent direct to the reporting establishment on which the latter can include information relating to all the manufacturing (or local) units which it comprises.

The inquiries provide a major source of information for keeping the register continuously up-to-date and act as a check on its detail and structure. For the establishments on the register which make returns to the quarterly inquiries, the industrial classification is derived from an analysis of their sales of commodities and is reviewed annually. Employment data is entered on the register from returns to the annual census of production. In cases where an establishment does not make a return to these inquiries the employment data is based on information provided by the Department of Employment with the annual censuses of employment.

Establishments with 20 or more employees are included in the censuses each year and the information they supply to the

census is supplemented by the returns that those of them with 25 or more employees provide to the quarterly inquiries. Information about establishments with less than 20 employees in most industries is less securely based, but increasing use has been made of data on these small establishments supplied by the Department of Employment. One benefit of using this information is an improvement in the estimates of the number of smaller establishments and enterprises, but there is little effect on other aggregates (e.g. employment, output, net capital expenditure).

Coverage

A return was required in the 1973 Census from each establishment with 20 or more employees. Each establishment is classified to an industry, as defined in the SIC, whose principal products form the major part of the establishment's sales.

Regions

The regions defined in Table 5 do not take account of the boundary changes arising out of the Local Government Act 1972 and the Local Government Act (Scotland) 1973. As these boundary changes did not come into effect until April 1974 in England and Wales and in May 1975 in Scotland, the regions defined for these analyses are consistent with boundaries which existed in 1973.

TERMS USED IN THE CENSUS REPORT

Average number employed

Establishments were required to state the number of persons on the payroll (i.e. whose national insurance cards were held by them) on the average during the year of return, whether full-time or part-time employees. Separate figures were required for:

- (a) administrative, technical and clerical employees
- (b) all other employees (operatives)

Averages could be calculated from the figures relating to the last week of each calendar month. Establishments were also required to state the number of working proprietors where appropriate and these are included in total employment figures. Outworkers (i.e. persons employed by establishments who worked in their own homes etc. on materials supplied by the establishment) are excluded. The figures include persons engaged on merchanting or factoring and canteen workers where particulars in respect of these activities could not be excluded from the return.

Working proprietors

These include all persons regarded as "self-employed" for national insurance purposes and members of their families who worked in the business without receiving a wage or salary; but such persons who worked less than half the normal number of working hours are excluded. Directors working in the business but not in receipt of a definite wage, salary or commission are included under this heading; directors paid by fee only are not included.

Employees

Administrative, technical and clerical employees include directors in receipt of a definite wage, salary or commission, managers, superintendents and works foremen; research, design employees (other than operatives); draughtsmen, editorial staff, advertising staff, travellers and all office employees.

Operatives include all other classes of employees, that is, broadly speaking, all manual wage earners. They include operatives employed in power stations, transport (including roundsmen), warehouses, stores, shops and canteens, inspectors, maintenance workers and cleaners. Operatives engaged in outside work of erecting, fitting etc. are also included, but outworkers are excluded.

Capital expenditure

Capital expenditure during the year in respect of manufacturing units where production had not started before the end of the year is included in the figures for 1970 to 1973. Establishments were asked not to deduct from the value of capital expenditure amounts received or expected to be received in grants or allowances from the Government or any statutory body or local authority. Establishments with 100 or more employees were also asked to include a total net capital expenditure figure for the calendar year 1973.

(a) New building work

This represents the cost incurred during the year of new building and other constructional work to be used in connection with the business covered by the return. The value is that charged to capital account during the year of return; it includes expenditure on new buildings or on the extension or reconstruction of old buildings, the value of works of a capital nature carried out by the establishment's own staff and the cost of any newly constructed buildings purchased. Figures shown include any legal charges, stamp duties, agents' commissions, etc.

(b) Land and existing buildings

The items shown are the capital cost of freeholds purchased and the capital cost of premium payable for leaseholds acquired (excluding the value of any assets acquired in taking over an existing business), and the amounts receivable for any freeholds or leaseholds disposed of. The value is that charged to capital account during the year of return.

(c) Plant, machinery and vehicles

The items shown are the value of plant and machinery and of vehicles acquired, both new and second-hand, and the amount received for items disposed of during the year. The value of plant and machinery acquired includes plant, etc., which firms produced for their own use in connection with the business covered by the return. The value of plant etc., acquired is the expenditure charged to capital account during the year of return less any discounts received, but including the cost of transport and installation. Deductible value added tax is excluded but non-deductible value added tax on motor cars acquired is included. No deduction is made for depreciation, amortization or obsolescence. The proceeds of items disposed of during the year exclude amounts written-off for items scrapped.

Gross output

In the calculation of gross output the value of total sales and work done is increased by the rise (or reduced by the fall) during the year in the value of work in progress and goods on hand for sale.

Net output

Net output, a customary census measure, is calculated by deducting from gross output the cost of purchases (reduced by the rise, or increased by the fall, during the year of stocks of materials etc.) and the cost of industrial services received, and — where applicable — duties etc.

Net output per head

The figures of net output per head are derived by dividing the net output by the average number of persons employed (full and part-time) on all activities covered by the returns, including operatives, administrative, technical and clerical workers and working proprietors, but excluding outworkers.

Gross value added at factor cost

Gross value added at factor cost is calculated by deducting from net output the cost of non-industrial services (rent of buildings and capital equipment, commercial insurance premiums, bank charges and amounts paid for professional services, postal etc. services, transport, advertising etc.). This estimate of gross value added approaches more closely than census net output to the definition of net output or value added in national accounts statistics.

Gross value added at factor cost per head

The figures of gross value added at factor cost per head are derived by dividing the gross value added by the average number of persons employed (full and part-time) on all activities covered by the returns, including operatives, administrative, technical and clerical employees and working proprietors, but excluding outworkers.

Purchases

Purchases include the cost of materials and components bought for use in production; of fuel and electricity for all purposes; of packaging materials including the cost of returnable cases and containers when first purchased; of workshop materials; office materials and materials for repairs to establishment's own buildings, plant and vehicles when carried out by their own work people included in the returns; of consumable tools; and of parts for machinery purchased during the year as replacements. Water charges are also

included. Purchases of goods for merchanting or factoring were collected separately for 1973. Materials supplied by customers for processing are excluded, as are all purchases charged to capital account. The values shown exclude value added tax but include any duty paid (less rebate etc.), values exclude trade discounts allowed. The cost of transport is included only if included in the cost of materials as invoiced; amounts paid to transport organisations, including an establishment's own separate transport organisations for delivery of materials and fuel are, therefore, excluded. Materials purchased overseas are included at the c.i.f. cost plus any duty payable if the cost of transport from the docks are not included in the invoiced price, but at their full delivery cost if invoiced "carriage paid home". Materials and fuel transferred from another department of the establishment not covered by the same return are included at the estimated selling value recorded by the other department.

Sales of goods produced, work done and industrial services rendered

Sales for the purposes of the annual censuses means deliveries on sale of goods made by establishments in the United Kingdom covered by the inquiry. Sales of goods made for these establishments by outworkers or by establishments from materials given out to them are included; as also are sales of waste products. Any new building work and machinery or other capital items produced by establishments for hiring out or leasing are regarded as sales, the value included in the return being that adopted in the establishments' capital asset accounts. Forward sales and canteen takings are excluded. All sales in the period of the injury are included irrespective of when the goods were manufactured. Goods produced in one establishment and transferred either to ancillary departments not engaged in production and for which there are separate accounts, or to another establishment of the same firm not covered by the return, are treated as sales by the producing establishment and valued as far as possible as if they had been sold to an independent purchaser. Goods transferred to wholesale or retail selling organisations, for which separate accounts are kept are valued on the same basis.

The value shown for sales is the "net selling value" defined as the amount (excluding value added tax) charged to customers whether on an ex-works or delivered basis, after any trade discounts and agents' commissions have been deducted. The cost of packing materials less allowance for returnable cases is included. In industries where products attract Excise Duty the value stated is usually inclusive of duty if sold duty-paid and exclusive of duty if sold in bond or exported.

Figures for work done represent the amount charged for work carried out on materials supplied by a customer and include repair work. Within certain industries this heading covers a wide variety of activities. For example, within the food sector — butter packed on commission; within the textile industries — making up of garments, fur dressing and textile finishing; within printing and publishing — preparatory work on type-setting, block making and binding. Work done is also significant in the electrical machinery and heavy engineering industries, covering erection, installation and repair and jobbing work. Other activities within this heading include exploration work, research and development, glass cutting and dressing and planing of timber. Industrial services rendered includes repairs and maintenance, installation work, and technical research and studies rendered to other organisations.

Capital goods produced for establishments' own use

This includes all work carried out during the year by the establishments' own staff for their own use, which was of a capital nature.

Non-industrial services rendered

Includes rents received for commercial and industrial buildings, amounts charged for hiring out plant, machinery and other goods and amounts charged to other organisations for the provision of transport. Also includes amounts received for the right to use patents, trademarks, copyrights etc., manufacturing and quarrying rights and technical "know-how"; revenue from such staff facilities as canteens are also included.

Goods merchanted or factored

Merchant goods are those (excluding canteen sales) sold without having been subjected to any manufacturing process by the seller.

Stocks and work in progress

Values are given of stocks of goods on hand for sale and of materials, stores and fuel, at the end of the year of return and of the change during the year, including any stocks of goods held for merchanting or factoring. Work in progress is defined as materials which have been partially processed by the establishment but which are not usually sold or transferred to another establishment without further processing. The values include the cost of materials consumed and labour used, together with a margin of overhead costs, and profits. Progress payments made to sub-contractors are excluded and progress payments received from other organisations are not deducted.

Wages and salaries

These are amounts paid during the year to operatives and to administrative, technical and clerical employees. Payments to working proprietors, whether called salaries or not, are excluded. The values shown include all overtime payments, bonuses and commissions, whether paid regularly or not, and no deduction is made for income tax, insurances, contributory pensions, etc. The value of any payments in kind, travelling expenses, lodging allowances, etc. and employers' contributions to national insurances and pension schemes are excluded.

Remuneration paid to outworkers

The remuneration paid to outworkers (i.e. persons employed by the establishment who do their work in their own homes) is generally on a piece-work basis. Only amounts paid to outworkers whose names appear on the establishment's payroll are included. Amounts paid to outworkers by sub-contractors are excluded.

Employers' insurance and welfare contributions

This item includes employers' contributions to national insurance and graduated pensions as well as commercial insurance premiums to provide pensions, superannuation or other retirement benefits, sickness benefits, personal accident benefits, disability or death benefits for employees or former employees or their dependants. Contributions to the running costs of canteens, social centres, children's holiday homes, etc. for employees, former employees, and their dependants are also included.

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