

## 77 Radio, radar and electronic capital goods

This Report on the Radio, Radar and Electronic Capital Goods Industry relates to establishments engaged wholly or mainly in manufacturing electric or electronic sound or visual signalling systems or apparatus such as bells, sirens, indicator panels, burglar and fire alarms, road traffic signalling equipment (but not signalling equipment of vehicles), electronic railway signalling equipment (but not electric railway signalling equipment); radio and television transmitters, radio communication receivers, radar and electronic navigational aids, high-frequency heating apparatus, magnetic compasses and gyroscopes, X-ray apparatus and electro-medical equipment including infra-red, ultra-violet, radiant heat, etc, lamps for diagnosis and therapy; electrical and electronic equipment for stimulation and massage; heart, kidney and lung machines; sterilising equipment and reading aids. Industrial electronic control equipment, electronic measuring equipment, electronic computers and electronic desk calculators are excluded.

This industry corresponds to minimum list heading 367 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 formed part of the Radio and Other Electronic Apparatus Industry (Part 58) in the last detailed Census of Production for 1963, corresponding to the sub-division of the industry 'Radio, radar and electronic capital goods' except that electro-medical apparatus and hearing aids with valve or transistor amplification formerly included in the report on the Scientific, Surgical and Photographic Instruments, Etc Industry (Part 53) and burglar and fire alarms and traffic control equipment for roads or inland waterways formerly included in the report on the Telegraph and Telephone Apparatus Industry (Part 57) are now included in this industry but instruments for measuring and testing electric magnitudes, instruments for physical and chemical analysis, and nucleonic instrument manufacture 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.  | 223                | 319     |          |
| Number of establishments                   | "  | 316                | 440     |          |
| Gross output                               | £'000  | 181,248            | 264,367 |          |
| Net output                                 | "  | 106,179            | 145,524 |          |
| Net output per head                        | £  | 1,409              | 1,845   |          |
| Sales and work done                        | { goods produced and work done (c)                       | £'000              | 163,662 | 238,079  |
|  | { merchanted goods and canteen takings                   | "                  | 12,238  | 17,077   |
| Purchases                                  | { materials for use in production and packaging and fuel | "                  | 59,621  | 95,162   |
|  | { goods for merchenting and canteen purchases            | "                  | 10,810  | 15,455   |
| Payments to other organisations            | { for work done on materials given out for transport     | "                  | 5,200   | 8,610    |
|  | { by road  | "                  | 445     | 444      |
|  | { by rail and other means excluding postal services      | "                  |         |          |
| Stocks and work in progress                |  |                    |         |          |
| Total stocks and work in progress          | { change during year                                     | "                  | + 6,355 | + 10,295 |
|  | { at end of year   | "                  | 72,583  | 131,743  |
| Goods on hand for sale                     | { change during year                                     | "                  | + 1,758 | + 2,359  |
|  | { at end of year   | "                  | 10,973  | 21,076   |
| Work in progress                           | { change during year                                     | "                  | + 3,590 | + 6,852  |
|  | { at end of year   | "                  | 42,220  | 89,285   |
| Materials, stores and fuel                 | { change during year                                     | "                  | + 1,007 | + 1,084  |
|  | { at end of year   | "                  | 19,390  | 21,382   |
| Number employed on average during the year | { total, including working proprietors                   | Th.                | 75.3    | 78.9     |
|  | { operatives   | "                  | 40.9    | 37.5     |
|  | { other employees (d)                                    | "                  | 34.2    | 41.1     |
| Wages and salaries                         | { of operatives  | £'000              | 26,920  | 32,274   |
|  | { of other employees (d)                                 | "                  | 30,985  | 54,017   |
| Capital expenditure (e)                    |  |                    |         |          |
| Total                                      | "  | 7,175              | 9,490   |          |
| New building work                          | "  | 1,237              | 1,633   |          |
| Land and existing buildings (f)            | "  | - 17               | - 23    |          |
| Plant and machinery (f)                    | "  | 5,755              | 7,430   |          |
| Vehicles (f)                               | "  | 200                | 451     |          |

(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 less than 1 per cent. A similar situation existed for 1963.

(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 | 162   | 249   |
| Average number employed: |       |       |
| Working proprietors      | 185   | 213   |
| Other persons employed   | 1,399 | 1,965 |

Footnotes continued on page 77/2.

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   | 68               | 65               | 196  | ..           | ..         | ..                  |
| 6-10  | 43               | 40               | 339  | ..           | ..         | ..                  |
| 11-24   | 83               | 75               | 1,447  | ..           | ..         | ..                  |
| 25-49   | 39               | 34               | 1,435  | 5,273        | 2,822      | 1,967               |
| 50-99   | 41               | 27               | 2,890  | 11,751       | 5,525      | 1,912               |
| 100-199   | 30               | 25               | 4,487  | 15,402       | 8,211      | 1,830               |
| 200-299   | 13               | 6                | 3,378  | 11,024       | 6,417      | 1,900               |
| 300-399   | 10               | 8                | 3,518  | 13,592       | 7,044      | 2,002               |
| 400-499   | 10               | 8                | 4,474  | 15,375       | 7,599      | 1,699               |
| 500-749   | 13               | 6                | 8,673  | 29,568       | 16,316     | 1,881               |
| 750-999   | 10               | 6                | 8,540  | 28,746       | 14,994     | 1,756               |
| 1,000-1,499   | 8                | 4                | 9,678  | 29,311       | 17,686     | 1,827               |
| 1,500 and over  | 14               | 8                | 29,421   | 96,308       | 54,502     | 1,852               |
| Unsatisfactory returns  | 58               | 57               | 410  | ..           | ..         | ..                  |
| Total   | 440              | 319              | 78,886   | 264,367(c)   | 145,524(c) | 1,845(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   | 898         | 518        | 760                | 645        | 846                         | 1,245      |
| 50-99   | 1,877       | 996        | 1,685              | 1,245      | 898                         | 1,250      |
| 100-199   | 2,564       | 1,916      | 2,049              | 2,313      | 799                         | 1,207      |
| 200-299   | 1,543       | 1,834      | 1,467              | 2,385      | 951                         | 1,301      |
| 300-399   | 1,749       | 1,762      | 1,721              | 2,497      | 984                         | 1,417      |
| 400-499   | 2,130       | 2,344      | 1,869              | 2,933      | 877                         | 1,251      |
| 500-749   | 4,057       | 4,616      | 3,209              | 5,922      | 791                         | 1,283      |
| 750-999   | 4,195       | 4,345      | 3,427              | 5,979      | 817                         | 1,376      |
| 1,000-1,499   | 3,985       | 5,693      | 3,320              | 7,969      | 833                         | 1,400      |
| 1,500 and over  | 13,470      | 15,951     | 11,874             | 20,652     | 882                         | 1,295      |
| Unsatisfactory returns  | ..          | ..         | ..                 | ..         | ..                          | ..         |
| Total   | 37,514(c)   | 41,108(c)  | 32,274(c)          | 54,017(c)  | 860(c)                      | 1,314(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    | 2         | 1         | 3             |
| 18 and over | 67        | 30        | 97            |
| All ages    | 69        | 31        | 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 7 establishments in 1968 and 21 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 £690,000 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 £20,697,000 at the beginning of year and £28,423,000 at end of year; and from overseas customers £11,099,000 at beginning of year and £10,348,000 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.   | 77      | 94      |
| Number of establishments                   | "   | 168     | 195     |
| Gross output                               | £'000   | 176,535 | 256,602 |
| Net output                                 | "   | 103,417 | 141,250 |
| Net output per head                        | £   | 1,409   | 1,845   |
| Sales and work done                        | { goods produced and work done (b) (c)<br>merchanted goods and canteen takings  | £'000   |         |
|  |   | 159,406 | 231,087 |
|  |   | 11,920  | 16,575  |
| Index of specialisation (d)                | Per cent.   | 61      | 74      |
| Purchases                                  | { materials for processing and packaging, and fuel<br>goods for merchandising and canteen purchases                     | £'000   |         |
|  |   | 58,070  | 92,367  |
|  |   | 10,529  | 15,001  |
| Payments to other organisations            | { for work done on materials given out<br>for transport<br>by road<br>by rail and other means excluding postal services | "       |         |
|  |   | 5,065   | 8,357   |
|  |   | 433     | 431     |
|  |   |         | 249     |
| Stocks and work in progress                |   |         |         |
| Goods on hand for sale                     | { change during year<br>at end of year  | "       |         |
|  |   | + 1,712 | + 2,289 |
|  |   | 10,687  | 20,457  |
| Work in progress (e)                       | { change during year<br>at end of year  | "       |         |
|  |   | + 3,497 | + 6,651 |
|  |   | 41,122  | 86,663  |
| Materials, stores and fuel                 | { change during year<br>at end of year  | "       |         |
|  |   | + 980   | + 1,053 |
|  |   | 18,886  | 20,754  |
| Number employed on average during the year | { total, including working proprietors<br>operatives<br>other employees (f)   | No.     |         |
|  |   | 73,374  | 76,569  |
|  |   | 39,945  | 36,510  |
|  |   | 33,392  | 40,008  |
| Wages and salaries                         | { of operatives<br>of other employees (f)   | £'000   |         |
|  |   | 26,268  | 31,410  |
|  |   | 30,254  | 52,572  |
| Wages and salaries per head                | { operatives<br>other employees (f)   | £       |         |
|  |   | 658     | 860     |
|  |   | 906     | 1,314   |
| Capital expenditure (g)                    |   |         |         |
| New building work                          |   | £'000   |         |
|  |   | 1,204   | 1,585   |
| Land and existing buildings                | { acquisitions<br>disposals   | "       |         |
|  |   | 73      | 491     |
|  |   | 89      | 514     |
| Plant and machinery                        | { acquisitions<br>disposals   | "       |         |
|  |   | 6,177   | 7,387   |
|  |   | 572     | 175     |
| Vehicles                                   | { acquisitions<br>disposals   | "       |         |
|  |   | 383     | 637     |
|  |   | 188     | 200     |

For notes to this table - see page 77/5.

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

|  | 1963   |        | 1968        |         |
|--|--------|--------|-------------|---------|
|  | Value  | Value  | Enterprises | Entries |
|  | £'000  | £'000  | Number      | Number  |
| Security alarms  |        |        |             |         |
| Complete   |        | 477    | 9           | 9       |
| Parts  |        | 184    | 8           | 8       |
| Security alarm systems and related equipment   |        |        |             |         |
| Complete   |        | 773    | 7           | 7       |
| Parts  | (a)    | 460    | 5           | 5       |
| Fire alarms, complete and parts  |        | 626    | 7           | 8       |
| Fire alarm systems and related equipment   |        |        |             |         |
| Complete   |        | 1,321  | 12          | 12      |
| Parts  |        | 447    | 8           | 8       |
| Traffic control equipment for roads or inland waterways (including equipment used for similar purposes in port installations or upon airfields and electronic control equipment for railways, but excluding electric control equipment for railways and signalling equipment for vehicles) (b) |        |        |             |         |
| Complete   | 5,240  | 1,898  | 15          | 17      |
| Parts  |        | 491    | 13          | 14      |
| Transmitters, sound and vision for public broadcasting   | 5,636  | 7,643  | 8           | 8       |
| Industrial television equipment (including equipment for teaching and demonstration purposes, but excluding television terminal units and television chassis substantially assembled) (c)  | 940    | 3,433  | 17          | 19      |
| Radio communication equipment (including radio relay link equipment complete)  |        |        |             |         |
| Ground, fixed and mobile   |        | 33,535 | 23          | 33      |
| Shipborne  | 32,617 | 4,879  | 20          | 23      |
| Airborne   |        | 5,063  | 8           | 9       |
| Relay link apparatus   |        | 1,265  | 5           | 5       |
| Radar and electronic navigation aid equipment complete   |        |        |             |         |
| Ground, fixed and mobile   |        | 32,970 | 21          | 30      |
| Shipborne  | 54,924 | 17,970 | 24          | 34      |
| Airborne   |        | 31,978 | 13          | 20      |
| Hearing aids with valve or transistor amplification  | 1,002  | 813    | 7           | 8       |
| X-ray apparatus  |        |        |             |         |
| Industrial (including parts other than tubes and valves)   | 4,655  | 466    | 6           | 6       |
| Medical and nucleonic (including parts other than tubes and valves) (d)  |        | 3,455  | *           | 7       |

Continued on next page.

TABLE 5 (continued)

|   | 1963    |         | 1968         |         |  |
|---|---------|---------|--------------|---------|--|
|   | Value   | Value   | Enter-prises | Entries |  |
| Electro-medical apparatus (excluding hearing aids and X-ray apparatus) (e)  | £'000   | £'000   | Number       | Number  |  |
| Patient monitoring/diagnostic equipment   | 590(f)  | 1,895   | 20           | 21      |  |
| Pathology and research laboratory equipment   |         | 2,994   | 17           | 17      |  |
| Therapeutical/surgical equipment  |         | 1,214   | 15           | 15      |  |
| Data handling/computer equipment for diagnostic purposes  |         | 752     | *            | *       |  |
| Lasers  | (a)     | 220     | 6            | 6       |  |
| Industrial radio-frequency induction and dielectric heating equipment (valve type)  |         |         |              |         |  |
| Dielectric heating  | 1,630   | 1,110   | *            | *       |  |
| Induction heating/melting equipment   |         |         |              |         |  |
| Not exceeding 10,000 c/s  |         | 615     | *            | *       |  |
| Over 10,000 c/s (high frequency)  |         | 2,067   | *            | *       |  |
| Other radio, radar and electronic capital goods (g)   | 19,402  | 21,936  | 44           | 54      |  |
| Other products  | 661     | 1,077   | 7            | 7       |  |
| Waste products  |         |         |              |         |  |
| Scrap metals  |         |         |              |         |  |
| Iron and steel  | 14      | 4       | 13           | 15      |  |
| Copper  | 12      | 2       | 10           | 11      |  |
| Brass   | 38      | 7       | 11           | 14      |  |
| Other metals  | 71      | 19      | 17           | 21      |  |
| Other waste products  | 23      | 18      | 13           | 15      |  |
| Work done   |         |         |              |         |  |
| Radio, radar and electronic capital goods (excluding broadcast receiving and sound reproducing equipment) installed and other installation work (h) | 3,757   | 7,379   | 19           | 24      |  |
| Repair and maintenance work on customers' radio, radar and electronic capital goods (excluding broadcast receiving and sound reproducing equipment) | 2,700   | 6,670   | 41           | 53      |  |
| Other work done   | 1,775   | 535     | 12           | 12      |  |
| Total   | 135,688 | 198,663 | ..           | ..      |  |
| Sales in other industries (see Table 6)   | 37,861  | 26,720  | ..           | ..      |  |
| Principal products of this industry sold by establishments in the industry  | 97,827  | 171,943 | 94           | 123(i)  |  |

(a) Not recorded separately for 1963.

(b) For 1963 described as 'Signalling apparatus, including road traffic signals, other than for railways'.

(c) 'Television terminal units and television chassis substantially assembled' were not specifically excluded for 1963.

(d) 'Nucleonic' X-ray apparatus was not specifically included for 1963.

(e) For 1963 described as 'Electro-medical equipment (excluding electronic medical and surgical measuring and testing instruments and X-ray apparatus)'.

(f) So far as recorded separately for 1963.

(g) For 1963 described as 'Other electronic equipment'.

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

(i) 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    |  |
|--|--------|--------|---------|--|
|  | Value  | Value  | Entries | Principal industries in which produced (a) |
|  | £'000  | £'000  | Number  |  |
| Security alarms; security alarm systems and related equipment  |        |        |         |  |
| Complete   | (b)    | 241    | 6       | 70,76,97                                   |
| Parts  |        | 65     | 7       | 52,70,79                                   |
| Fire alarms; fire alarm systems and related equipment  |        |        |         |  |
| Complete   | (b)    | 507    | 10      | 47,71,72,73                                |
| Parts  |        | 61     | 5       | 61,79                                      |
| Traffic control equipment for roads or inland waterways (including equipment used for similar purposes in port installations or upon airfields and electronic control equipment for railways, but excluding electric control equipment for railways and signalling equipment for vehicles), complete and parts | 3,923  | 1,335  | 19      | 71,76,79,97                                |
| Transmitters, sound and vision for public broadcasting; industrial television equipment (including equipment for teaching and demonstration purposes, but excluding television terminal units and television chassis substantially assembled)  | 8,399  | 3,077  | 8       | 65,67,74,75                                |
| Radio communication equipment (including radio relay link equipment complete), ground, fixed and mobile, and shipborne and airborne  |        | 2,025  | 8       | 70,74,84,97                                |
| Radar and electronic navigation aid equipment complete   |        |        |         |  |
| Ground, fixed and mobile   | 12,153 | 7,166  | 8       | 64,70,75,84                                |
| Other  |        | 4,577  | 10      | 70,73,84,94                                |
| Hearing aids with valve or transistor amplification; X-ray apparatus, industrial (including parts other than tubes and valves)   |        | 192    | 5       | 47,74                                      |
| Electro-medical apparatus (excluding hearing aids and X-ray apparatus)   | 2,945  |        |         |  |
| Patient monitoring/diagnostic equipment  |        | 858    | 9       | 70   |
| Pathology and research laboratory equipment  |        | 358    | 11      | 64,69,70,127                               |
| Therapeutical/surgical equipment   |        | 252    | 6       | 69,70,78                                   |
| Other radio, radar and electronic capital goods  | 10,441 | 3,817  | 32      | 63,64,74,78                                |
| Work done  |        |        |         |  |
| Radio, radar and electronic capital goods (excluding broadcast receiving and sound reproducing equipment) installed and other installation work  | -      | 810    | 7       |  |
| Repair and maintenance work on customers' radio, radar and electronic capital goods (excluding broadcast receiving and sound reproducing equipment)  | -      | 1,378  | 16      |  |
| Total  | 37,861 | 26,720 | ..      |  |

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

(b) Not recorded separately 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                  |                |
|---|----------|----------------|-----------------------|----------------|
|   | Quantity | Value<br>£'000 | Quantity<br>Thousands | Value<br>£'000 |
| Miscellaneous non-electrical machinery, complete and parts  | ..       | 9,697          | ..                    | 1,730          |
| Instrument engineering  |          |                |                       |                |
| Medical, surgical, veterinary and dissecting instruments, appliances and equipment  |          |                | ..                    | 265            |
| Industrial control systems and equipment  |          |                | ..                    | 6,657          |
| Instruments for measuring and testing   |          |                |                       |                |
| Non-electric magnitudes   | ..       | 6,937          | ..                    | 119            |
| Electric magnitudes   |          |                | ..                    | 769            |
| Cinematograph apparatus; clocks; echo sounders and other nautical instruments; other scientific industrial, etc instruments and apparatus   |          |                | ..                    | 4,201          |
| Electrical engineering  |          |                |                       |                |
| Electrical machinery, complete and parts  |          |                | ..                    | 400            |
| Radio and electronic components   |          |                |                       |                |
| Valves, electronic, electronic stabilising tubes and cathode ray tubes; semi-conductor devices  |          |                | ..                    | 818            |
| Passive components  |          |                | { 644<br>..           | 710<br>1,602   |
| Components of gramophones, record players and tape recorders; loudspeakers and microphones  |          |                | ..                    | 139            |
| Broadcast receiving and sound reproducing equipment   | ..       | 30,601         | { 25.5<br>..          | 794<br>262     |
| Electrical equipment for motor vehicles, wheeled tractors, motor cycles, cycles and aircraft and for other internal combustion engines (excluding accumulators and bulbs), complete and parts |          |                | ..                    | 246            |
| Electric lighting fittings, wiring and accessories, etc   |          |                | ..                    | 277            |
| Other electrical goods, (including telegraph and telephone apparatus and equipment, and electronic computers)   |          |                | ..                    | 17,145         |
| Miscellaneous metal manufactures  | ..       | 596            | ..                    | 125            |
| Other goods   | ..       | 917            | ..                    | 1,701          |
| <b>Total goods sold</b>   |          | <b>48,749</b>  |                       | <b>37,959</b>  |
| Work done   |          |                |                       |                |
| Research and development  |          | 10,956         |                       | 12,294         |
| Machinery installed and other installation work other than radio, radar and electronic capital goods  |          | -              |                       | 1,056          |
| Repair and maintenance work on customers' machinery, plant, apparatus and appliances other than of radio, radar and electronic capital goods  |          | 471(a)         |                       | 1,660          |

TABLE 7 (continued)

|   | 1963     |                | 1968     |                |
|---|----------|----------------|----------|----------------|
|   | Quantity | Value<br>£'000 | Quantity | Value<br>£'000 |
| Services rendered to other organisations (b)  |          | 1,403          |          | 6,175          |
| Total value of goods sold without having been subjected to any manufacturing process (merchanted or factored) |          | 11,150         |          | 15,686         |
| Canteen takings   |          | 770            |          | 889            |
| <b>Total</b>  |          | <b>73,499</b>  |          | <b>75,719</b>  |

(a) Includes building and civil engineering work for 1963 but the estimated value of goods made and used in building and civil engineering work amounting to £50,269 has been deducted from the gross figure for 1963 in order to avoid duplication which arises because they have been included against the appropriate sales headings elsewhere in the Report. For 1968 there was no building and civil engineering work.

(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         |
|   | Th.tons  | £'000 | Th.tons   | £'000        |
| Materials for use in production   |          |       |           |              |
| Iron castings, pig iron, including refined pig iron, and other irons for re-melting   | ..       | 42    | ..        | 46           |
| Steel   |          |       |           |              |
| Ingots, blooms, billets, slabs (including sheet/plate mill slabs and sheet bars)  | 0.1      | 22    | 0.5<br>.. | 36<br>11     |
| Bars and rods (including wire rods), angles, shapes and sections, girders, beams, joists and pillars rolled (not fabricated), including tube rounds and squares | 4.9      | 443   | 3.3<br>.. | 294<br>238   |
| Plates, 3mm. thick and over   | 0.8      | 65    | 1.9       | 94           |
| Sheets under 3mm. thick (including electrical sheets)   | ..       | 31    |           |              |
| Hoop and strip (including tape of all thicknesses)  | 3.4      | 272   | 2.5<br>.. | 240<br>63    |
| Forgings (except drop forgings)   | 1.7      | 143   | ..        | 58           |
| Castings  | 0.2      | 35    | ..        | 15           |
| Iron and steel not elsewhere specified except finished parts, wire and scrap  | 4.8      | 893   | ..        | 102          |
| Wrought tubes and fittings for wrought tubes (including welded, seamless, conduits, etc)  | 0.4      | 95    | 0.6       | 99           |
| Other   | ..       | 12    | ..        | 17           |
| Springs, laminated and other types  | 0.3      | 45    | 2.8       | 237          |
| Light metals and non-ferrous metals in all forms except finished parts, wire and scrap  | ..       | 14    |           |              |
| Aluminium and aluminium alloys  | ..       | 134   | ..        | 361          |
| Brass and other copper alloys (including nickel silver and cupro nickel, but excluding all other nickel alloys and cadmium copper) (a)                          | 4.5      | 1,759 | 2.6<br>.. | 1,297<br>396 |
| Copper (including cadmium copper) (b)   | 0.9      | 315   | 0.7       | 392          |
| Castings and forgings   | ..       | 144   | ..        | 346          |
| Rods, extrusions and bars   | 0.2      | 91    | 0.2       | 150          |
| Other   |          |       | ..        | 96           |
| Zinc and alloys of zinc   | 0.5      | 67    | ..        | 77           |
| Nickel and nickel alloys (excluding nickel silver, and cupro nickel)  | ..       | (c)   | ..        | 130          |
| Solder, soft  | ..       | 60    | ..        | 138          |
| Uninsulated wire and cables of non-ferrous metals   |          |       |           |              |
| Copper  | ..       | 122   | ..        | 491          |
| Other non-ferrous metals  | ..       | 83    | ..        | 53           |
| Glass in all forms (including finished parts)   | ..       | 171   | ..        | 219          |
| Ferrite   | ..       | 86    | ..        | 158          |
| Insulating oils   | ..       | 7     | ..        | 9            |

TABLE 10 (continued)

|   | 1963      |            | 1968       |           |
|---|-----------|------------|------------|-----------|
|   | Quantity  | Cost       | Quantity   | Cost      |
|   | Th.tons   | £'000      | Th.tons    | £'000     |
| Materials for use in production (continued)   |           |            |            |           |
| Mica  |           |            |            |           |
| Block and splittings  | ..        | 18         | ..         | 5         |
| Built-up (Micanite) including components (d)  | ..        | 3          | ..         | 39        |
| Other mica products   | ..        | (c)        | ..         | 35        |
| Paper and paperboard including press-board and paper yarn, tubes, etc but excluding packaging materials   | ..        | 84         | ..         | 38        |
| Porcelain and other ceramics in all forms   | ..        | 113        | ..         | 148       |
| 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 (e) | ..        | 265        | ..         | 217       |
| Paint and varnish (including lacquers and stains)   | Th.gals   |            | Th.gals    |           |
| Synthetic resins and plastics materials (excluding leathercloth and reinforced plastics)  | 132       | 219        | 87.0<br>.. | 178<br>54 |
| Polyethylene and polypropylene and copolymers   | Th.cwt.   |            | Th.cwt.    |           |
| Granules, moulding and extrusion compounds  | 0.5<br>.. | 13<br>9    | 1.3<br>..  | 19<br>8   |
| Sheet, rod, film, profile shapes and monofilament   | ..        | (c)        | 0.1<br>..  | 7<br>26   |
| Polyvinyl chloride (including copolymers)   |           |            |            |           |
| Polymers and copolymers including the net resin content of latices, solutions and dispersions, plasticised moulding and extrusion compounds (f)   | 1.3       | 29         | ..         | 45        |
| Plasticised and unplasticised sheet, film, rod, tube, profile shapes and foam   | ..        | (c)        | 0.7<br>..  | 44<br>46  |
| Polystyrene (including copolymers) (g)  | ..        | 26         | ..         | 31        |
| Phenolics and allied products: resins (the net resin content), solutions, emulsions, dispersions, moulding and extrusion compounds  | 0.3<br>.. | 6<br>1     | 0.4<br>..  | 30<br>30  |
| Laminated thermosetting sheet (including decorative), cast sheet, laminated or cast rod, tube and profile shapes  | 2.6<br>.. | 150<br>140 | 2.2<br>..  | 109<br>77 |
| Thermosetting polyesters, including epoxide resins (the net resin content excluding filler) and resin glass fibre mixtures  | 0.5<br>.. | 20<br>3    | 2.0<br>..  | 138<br>55 |
| Timber  |           |            |            |           |
| Softwood and hardwood, manufactured or semi-manufactured (ie further prepared than sawn or planed)  | ..        | 48         | ..         | 54        |
| Plywood, including blockboard, laminboard and battenboard   | Th.sq.ft. |            | Th.sq.ft.  |           |
|   | 810<br>.. | 74<br>8    | 185<br>..  | 17<br>12  |

Continued on next page.

TABLE 10 (continued)

|  | 1963      |        | 1968      |        |
|--|-----------|--------|-----------|--------|
|  | Quantity  | Cost   | Quantity  | Cost   |
|  | Th.lb.    | £'000  | Th.lb.    | £'000  |
| Materials for use in production (continued)  |           |        |           |        |
| Textiles (excluding packaging materials)   |           |        |           |        |
| Yarn, thread, tape and cloth, not oiled or otherwise coated or impregnated with insulating materials                                 |           |        |           |        |
| Of cotton  | ..        | 3      | 6.5       | 10     |
|  |           |        | ..        | 1      |
| Of man-made fibres (nylon, rayon, etc)   | 30.7      | 13     | 20.9      | 17     |
|  | ..        | 3      | ..        | 23     |
| Insulated wires, cables, strips and strands  | ..        | 1,900  | ..        | 2,087  |
| Electrical insulating materials not elsewhere specified  | ..        | 302    | ..        | 337    |
| Bolts, rivets, nuts and washers, screws, nails and tacks etc   | ..        | (c)    | ..        | 1,046  |
| Electrical machinery   |           |        |           |        |
| Motors (AC and DC) 1 h.p. and over   |           |        | ..        | 425    |
| Control gear   |           |        | ..        | 689    |
| Fuse gear  |           |        | ..        | 117    |
| Switch gear  | ..        | 3,970  | ..        | 753    |
| Generators   |           |        | ..        | 491    |
| Transformers and rectifying apparatus  |           |        | ..        | 1,637  |
| Other electrical machinery   |           |        | ..        | 1,044  |
| Electrical components not elsewhere specified  |           |        |           |        |
| Loudspeakers   | ..        | 191    | ..        | 252    |
| Microphones  | ..        |        | ..        | 251    |
| Valves, electronic (other than X-ray valves), electronic stabilising tubes and cathode ray tubes (excluding mercury pool rectifiers) |           |        |           |        |
|  | Thousands |        | Thousands |        |
| Transmitting and industrial  | 1,810     | 2,222  | 569       | 2,133  |
|  | ..        | 558    | ..        | 1,191  |
| Other (including cathode ray tubes)  | 296       | 565    | 408       | 1,458  |
|  | ..        | 123    | ..        | 582    |
| Batteries and accumulators   | ..        | 46     | ..        | 1,007  |
| Magnets, permanent   | ..        | 193    | ..        | 143    |
| Semi-conductor devices   | 9,936     | 2,820  | 20,185    | 4,897  |
|  | ..        | 606    | ..        | 1,397  |
| Capacitors   |           |        | ..        | 4,993  |
| Resistors  |           |        | ..        | 3,529  |
| Micro-circuits   | ..        | 11,651 | ..        | 2,584  |
| Silicon transistors  |           |        | ..        | 3,824  |
| Other electrical components  |           |        | ..        | 18,963 |
| Fractional horse-power motors (less than 1 h.p.)   |           |        |           |        |
| Other components for incorporation in firms' own products  | ..        | 1,113  | ..        | 1,194  |
| Internal combustion engines  |           |        |           |        |
| Ball and roller bearings and parts thereof   | ..        | 272    | ..        | 278    |

TABLE 10 (continued)

|   | 1963      |       | 1968      |        |
|---|-----------|-------|-----------|--------|
|   | Quantity  | Cost  | Quantity  | Cost   |
|   |           | £'000 |           | £'000  |
| Materials for use in production (continued)   |           |       |           |        |
| Other components for incorporation in firms' own products (continued)   |           |       |           |        |
| Measuring and control instruments (including ammeters, voltmeters, thermostats etc)   | ..        | 2,671 | ..        | 2,274  |
| Radio, radiogram and television cabinets of wood  | ..        | 236   | ..        | 101    |
| Other components not elsewhere specified  |           |       |           |        |
| Wholly or mainly of plastics materials  | ..        | 1,398 | ..        | 820    |
| Other materials except of rubber or glass   | ..        | 8,589 | ..        | 9,507  |
|   | Th.gal.   |       | Th.gal.   |        |
|   | 194       | 77    | 94.8      | 51     |
| Lubricating oils and greases (including cutting oils and emulsions)   | Th.cwt.   |       | Th.cwt.   |        |
|   | { 0.3     | 4     | 0.6       | 7      |
|   | { ..      | 13    | ..        | 21     |
| 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  | ..        | 1,448 | ..        | 70     |
| Other   |           |       | ..        | 777    |
| All other materials for use in production   | ..        | 7,909 | ..        | 10,188 |
| Packaging materials   |           |       |           |        |
| Paper and board   |           |       |           |        |
| Boxes, cartons, drums and canisters (with or without metal ends) of paper and cardboard   | ..        | 518   | ..        | 388    |
| Fibreboard packing cases  |           |       | ..        | 31     |
| Wrapping and packing paper (including paper coated with plastics and any laminates incorporating paper but not metal)   |           |       | ..        | 73     |
| 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) | ..        | 87    | ..        | 77     |
| Timber  |           |       |           |        |
| Containers wholly or mainly of wood (including plywood boxes and drums other than cable drums), baskets and wickerwork crates   | ..        | 457   | ..        | 489    |
|   | Th.cu.ft. |       | Th.cu.ft. |        |
| Timber (sawn or planed) for manufacture into packing cases, etc   | 23.9      | 18    | 33.4      | 27     |
|   | ..        | 9     | ..        | 14     |
|   | Th.sq.ft. |       | Th.sq.ft. |        |
| Plywood for manufacture into packing cases  | 208       | 15    | 51.1      | 4      |
|   | ..        | 2     | ..        | 4      |
| All other packaging materials   | ..        | 45    | ..        | 283    |

Continued on next page.



TABLE 10 (continued)

|   | 1963            |              | 1968            |              |
|---|-----------------|--------------|-----------------|--------------|
|   | Quantity        | Cost         | Quantity        | Cost         |
|   | Th. tons        | £'000        | Th. tons        | £'000        |
| Fuel and electricity (h)  |                 |              |                 |              |
| Coal  | 15.0            | 82           | 9.2             | 55           |
| Coke (including screenings) and manufactured fuel   | { 2.6<br>..     | { 26<br>8    | { 1.7           | { 18         |
|   | Th. gal.        |              | Th. gal.        |              |
| Derv fuel and motor spirit for use in road vehicles                                       | { 509<br>..     | { 110<br>37  | { 1,000<br>..   | { 209<br>55  |
| Other liquid fuels (including creosote/pitch mixtures, etc and liquified petroleum gases) | 5,617           | 241          | { 3,219<br>..   | { 209<br>114 |
|   | Th. therms      |              | Th. therms      |              |
| Gas   | { 1,768<br>..   | { 145<br>16  | { 1,364<br>..   | { 104<br>42  |
|   | Th. kWh         |              | Th. kWh         |              |
| Electricity   | { 147,759<br>.. | { 852<br>128 | { 113,629<br>.. | { 918<br>493 |
| All other fuels   | ..              | (c)          | ..              | 10           |
| Total cost of materials and fuel  |                 | 58,070       |                 | 92,367       |
| Goods purchased for merchanting   |                 | 9,891        |                 | 13,264       |
| Canteen purchases   |                 | 638          |                 | 1,737        |
| Total cost of purchases   |                 | 68,599       |                 | 107,368      |

(a) 'Cadmium copper' was not specifically excluded for 1963.

(b) 'Blister' was specifically excluded and 'Cadmium copper' was not specifically included for 1963.

(c) Not recorded separately for 1963.

(d) 'Components' were not specifically included for 1963.

(e) For 1963 described as 'Rubber including hard rubber, balata, gutta-percha and synthetic rubber in all forms, including finished parts'.

(f) 'Emulsions' were specifically included for 1963.

(g) 'Copolymers' were not specifically included for 1963.

(h) Owing to the risk of disclosure of information relating to individual firms the total quantity of electricity generated in firms' own establishments in 1963 cannot be given. None was recorded in this industry in 1968.

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.  | 370      | 510   |
| Transport costs   |  |          |       |
| Wages and salaries  | £'000  | 286      | 519   |
| Derv fuel and motor spirit                                  | "  | 147      | 264   |
| Tyres and other spare parts for road goods vehicles         | "  | ..       | 70    |
| Payments to other organisations for transport               | { by road<br>by rail and other means excluding postal services | { 433    | { 431 |
| Costs of operating road goods vehicles                      |  |          |       |
| Insurance   | "  | 53       | 47    |
| Vehicle licences  | "  | 21       | 52    |
| Depreciation  | "  | 400      | 179   |
| Payments to other organisations for repairs and maintenance | "  | 46       | 109   |
| Total   | "  | 1,386(a) | 1,921 |

(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  | 433             | 683   |
| Road goods vehicles  | 46              | 109   |
| Plant, machinery and other capital equipment                     | 423             | 696   |
| Insurance, licensing and depreciation of road goods vehicles (b) | 474             | 279   |
| Rates, excluding water rates                                     | 825             | 1,496 |
| Hire of plant and machinery                                      | 199             | 824   |
| Postage, telephone, telegrams, cables and telex (c)              | 963             | 1,881 |
| Total  | 3,364           | 5,969 |

(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)  | 3.3                                  | 0.4                                 |
| May        | 0.8                                  | 0.1                                 |
| June       | 5.7                                  | 8.5                                 |
| July       | 1.6                                  | 0.7                                 |
| August     | 3.3                                  | 1.9                                 |
| September  | 8.1                                  | 4.8                                 |
| October    | 0.8                                  | 0.1                                 |
| November   | 2.4                                  | 0.1                                 |
| December   | 36.6                                 | 48.8                                |
| 1969       |                                      |                                     |
| January    | 2.4                                  | 1.4                                 |
| February   | 1.6                                  | 0.2                                 |
| March      | 30.1                                 | 29.5                                |
| April (b)  | 3.3                                  | 3.5                                 |
|            | 100                                  | 100                                 |

(a) From 6 April

(b) To 5 April