

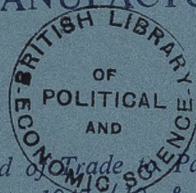
BOARD OF TRADE

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*The Report on the
Census of Production
for 1954*

Volume 3: Industry K

AIRCRAFT MANUFACTURE AND REPAIR



*Presented by the Board of Trade to Parliament in pursuance of the
Statistics of Trade Act, 1947 (10 & 11 Geo. 6 Ch. 39, Sec. 7)*

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The Report on the Census of Production for 1954

VOLUME 3 INDUSTRY K

AIRCRAFT MANUFACTURE AND REPAIR

THIS REPORT on the Aircraft Manufacture and Repair Industry relates to establishments engaged wholly or mainly in the manufacture and repair of complete aircraft (including gliders and balloons) and frames, and of engines, propellers, undercarriages, and other parts and accessories (except electrical equipment).

This industry corresponds to minimum list heading 82 with the addition of establishments manufacturing miscellaneous parts and accessories of aircraft included in heading 83 in the Standard Industrial Classification.

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IMPORTANT NOTES and definitions appear on the next page. In interpreting the data in the tables, it is essential to bear these in mind.

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The following notes describe terms in general use in the tables of the report. More detailed explanations of the terms used and a description of the scope and method of taking the census are given in the separate booklet entitled 'The Report on the Census of Production for 1954 - Introductory Notes' (price 1s. 6d. net).

Industrial Classification: Establishments are classified to industries according to the nature of their output and, as far as possible, in conformity with the Standard Industrial Classification. Certain products are identified as the principal products of individual industries, the principal products for a given industry being of a similar nature or commonly associated in production. The principle of classification normally followed is that an establishment is classified to an industry if its output of the principal products of that industry accounted for a greater proportion of the value of its output than did its output of the principal products of any other industry.

Specialist producers normally comprise those establishments 50 per cent. or more of whose total output by value is accounted for by the characteristic products of the specialist group.

Intermediate products: For some industries figures are given showing the total quantities made during the year of intermediate products, i.e., products which may be further processed in the establishments in which they are produced.

Larger establishments: The information given in the report relates mainly to 'larger establishments', i.e., establishments of firms employing on the average more than 10 persons. In most cases an establishment comprises the whole of the premises under the same ownership or management at a particular address (e.g., a mine or factory). Offices, warehouses, laboratories and other ancillary places of business situated apart from the producing works are not regarded as separate establishments and are included in the return for the works.

Small firms are those employing on the average 10 or fewer persons.

The estimates for the industry as a whole given in Table 1 are normally obtained by increasing the other items shown in the same proportion as total employment.

Gross output (production) is the total value of goods made and other work done during the year; it is obtained by adjusting the value of sales and work done during the year for changes in the value of stocks of products on hand for sale and work in progress.

Net output is the amount left after deducting from the value of gross output the aggregate of the cost of materials and fuel used, the amount paid for work given out and, for 1951 and 1954, any transport payments made. This represents the value added to materials by the process of production, and constitutes the fund from which wages, salaries, rents, rates and taxes, advertising and other selling expenses and all other similar charges have to be met, as well as depreciation and profits.

Sales means sales during the year of goods made in the establishment covered by the return or made on commission for it, whether produced in the year or not. The value of sales is the net selling value, i.e., the amount charged to customers, whether on an ex-works or delivered basis, and net of any trade discounts, agents' commissions, allowances for returnable cases, purchase tax, etc. For goods charged on a delivered basis to customers overseas, firms were required to give the f.o.b. value.

Materials and fuel: The total cost of materials and fuel purchased includes all purchases during the year of materials for use in production, and of fuel (includ-

ing oil, gas and electricity) for all purposes; packing materials, including the full cost of returnable cases when first purchased; workshop and office materials; water charges; materials for repairs to buildings, plant and vehicles when carried out by firms' own work-people included in their returns; consumable tools; and parts for machinery purchased as replacements. Purchases of goods for merchandising are excluded. The cost of materials and fuel used, given in Table 2, is obtained by adjusting purchases for changes during the year in the value of stocks.

Stocks: Firms were required to give stocks of materials and fuel, products on hand for sale, and work in progress, at income tax values.

Customs and Excise Duty paid on materials purchased is normally included in the cost of materials. Finished goods are similarly valued as they were sold, duty-paid or duty-free. The net amount of any duty paid is deducted in arriving at net output.

Employment: Total employment includes working proprietors, administrative, technical and clerical employees, and operatives, but excludes outworkers, canteen employees and persons engaged in merchandising or any other activity not covered by a firm's return, who are shown separately as excluded employees. Employees are persons on the pay-roll (i.e., persons whose National Insurance cards were held by employers), whether employed full-time or part-time.

Working proprietors are proprietors of businesses other than limited companies, together with members of their families who worked in the business without receiving fixed wages or salaries. Any persons working less than half the normal hours are excluded. For Northern Ireland directors of limited companies (other than those paid by fee only) are also included.

Administrative, technical and clerical employees include directors, other than those paid by fee only (except in Northern Ireland); managers, superintendents and works foremen; research, experimental, development, technical and design employees (other than operatives); draughtsmen and tracers; travellers; and office (including works office) employees.

Operatives include all other classes of employees, i.e., broadly speaking, all manual workers.

Outworkers are persons employed by the firm who work on materials supplied by the firm in their own homes.

Wages and salaries include all overtime payments, bonuses and commissions without any deductions for income tax, insurances, contributory pensions etc. They exclude payments to working proprietors.

Capital expenditure includes expenditure on new building work, and on plant, machinery and vehicles, charged to capital account during the year, including any transport and installation costs involved. It includes expenditure in respect of establishments in Great Britain which had not begun production before the end of the year (which has not previously been included in the Census of Production reports for individual industries).

Symbols used:

.. for not available

- for nil or negligible (less than half the final digit shown).

Where figures are rounded, e.g., given to the nearest £ thousand, there may be apparent slight discrepancies between the sums of constituent items and the totals shown. In some cases, figures have been combined with others of a similar nature where publication of separate details might disclose information relating to an individual undertaking.

Industry summary

Estimates for the industry as a whole

TABLE 1

	United Kingdom			Scotland 1954	Wales 1954
	1948	1951	1954		
Gross output (production)	£ million 121.1(a)	£ million 188.9	£ million 394.5	£ million 23.33	£ million 2.93
Net output	70.4	99.6	195.6	13.34	1.79
Total stocks and work in progress					
At beginning of year	73.1	84.8	212.5	9.27	(b)
Change during year	+ 3.7	+ 25.0	+ 30.5	- 0.07	(b)
Capital expenditure less disposals (c)	3.8	5.9	11.5	0.3	0.06
Wages and salaries	51.4	68.2	131.1	8.53	1.07
Total employment (including working proprietors)	Thousands 139.4	Thousands 157.6	Thousands 241.8	Thousands 16.55	Thousands 2.19

(a) Including receipts from Government Departments, shown separately for 1948.

(b) Owing to the risk of disclosure of information relating to individual undertakings, separate particulars cannot be given.

(c) Capital expenditure on new building work, plant, machinery and vehicles (including (except in 1948) that incurred in Great Britain for establishments not yet in production), less amounts received for plant, machinery and vehicles disposed of. Capital expenditure financed by the Ministry of Supply, which in the years 1951 to 1954 was very substantial, has not been included in any year.

Summary of returns received

TABLE 2

	Unit	Great Britain 1948	United Kingdom	
			1951	1954
FIRMS EMPLOYING ON AVERAGE MORE THAN 10 PERSONS				
Number of establishments	No.	195	215	280
Total value of sales and work done	£'000	111,283	169,751	359,822
Products on hand for sale	"	59,556	72,549	179,275
and work in progress	"	+ 2,696	+ 19,006	+ 34,091
Gross output (production) (a)	"	113,826	188,757	393,913
Receipts from Government Departments	"	2,676
Purchases of materials and fuel	"	43,356	79,480	138,549
Stocks of materials and fuel	"	10,713	12,164	32,941
Cost of materials and fuel used	"	+ 894	+ 5,993	- 3,617
Payment for work done on materials given out	"	42,462	73,487	142,166
Payment for transport (b)	"	6,331	15,102	55,219
Net output	"	154	653	1,173
Average number of employees	No.	67,709	99,515	195,355
Total employment (d)	"	93,912	109,215	164,884
Net output per person employed (d)	"	40,131(c)	48,234	76,527
Wages and salaries	£'000	134,046	157,454	241,418
Capital expenditure	"	505	632	809
New building work (e)	"	32,936	45,325	87,136
Plant and machinery	"	16,539	22,839	43,747
Vehicles	"	780	1,508	3,543
	"	2,839	3,774	7,426
	"	211	157	309
	"	286	539	719
	"	44	83	139
FIRMS EMPLOYING ON AVERAGE 10 OR FEWER PERSONS				
Number of returns	No.	24	19(f)	34
Total employment, including working proprietors	"	149	121(f)	241

(a) For the year 1948 gross output excludes payments for transport services outwards on finished goods sold. For subsequent years gross output includes payments to other firms and undertakings and to firms' own separate transport organisations for transport services.

(b) Payments to other firms and undertakings and to firms' own separate transport organisations. For the year 1948 payments cover only transport outwards of finished goods sold. For subsequent years they cover payments for transport of both finished goods sold and materials and fuel purchased.

(c) Number in week ended September 25, 1948.

(d) Excluding outworkers and including working proprietors.

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

(f) Excluding Northern Ireland. No information about small firms was collected in Northern Ireland for 1951.

Analysis by size, 1954

TABLE 3

Larger establishments in the United Kingdom

Average number employed (a)	Establishments	Gross output	Net output	Employees		Wages and salaries		Capital expenditure (b)	Net output per person employed (a)
				Operatives	Others	Operatives	Others		
	Number	£'000	£'000	Number	Number	£'000	£'000	£'000	£
11 - 24	20	397	248	260	100	123	58	212	688
25 - 49	27	1,206	768	830	171	393	109	35	764
50 - 99	42	3,926	2,405	2,305	671	1,100	411	139	808
100 - 199	41	7,872	4,756	4,192	1,763	2,088	996	283	799
200 - 299	27	11,070	5,884	4,876	1,944	2,570	1,136	669	863
300 - 399	16	7,880	4,665	4,315	1,397	2,121	810	198	817
400 - 499	12	8,710	4,637	3,621	1,542	2,008	862	233	898
500 - 749	20	18,357	9,537	8,158	3,691	4,196	2,131	323	805
750 - 999	15	23,170	12,710	9,289	4,287	4,891	2,432	1,069	936
1,000 - 1,499	15	28,284	16,504	13,517	5,889	7,046	3,363	1,265	850
1,500 - 1,999	11	34,805	16,988	12,777	6,306	7,069	3,600	731	890
2,000 - 2,499	6	19,699	10,226	8,735	4,490	4,578	2,726	493	773
2,500 - 2,999	9	39,011	18,470	16,926	7,704	8,778	4,526	526	750
3,000 - 3,999	4	27,089	11,209	9,382	3,979	5,001	2,081	457	839
4,000 - 4,999	4	29,619	16,328	11,667	6,455	6,384	3,644	1,234	901
5,000 and over	11	132,819	60,021	54,034	26,138	28,791	14,864	3,820	749
Total	280	393,913	195,355	164,884	76,527	87,136	43,747	11,688	809

(a) Excluding outworkers and including working proprietors.

(b) Capital expenditure on new building work and on acquisition of plant, machinery and vehicles, excluding expenditure for establishments not yet in production.

Analysis according to specialisation within the industry, 1954

TABLE 4

Larger establishments in the United Kingdom

	Unit	Specialist producers of				Remainder of the industry	Total
		Complete aircraft and airframes, gliders and sailplanes	Airframes	Aero-engines and parts	Parts and accessories of aircraft, (including propellers and undercarriages)		
Number of establishments	No.	19	34	43	44	140	280
Total value of sales and work done	£'000	54,262	68,358	106,044	23,873	107,286	359,822
Sales of characteristic products	"	33,362	41,500	78,724	17,775	54,458	179,275
Products on hand for sale	"	46,225	46,099	26,117	6,377	10,831	34,091
and work in progress	"	+ 13,636	+ 10,370	- 837	+ 90	+ 10,831	+ 34,091
Gross output (production)	"	67,898	78,728	105,207	23,963	118,117	393,913
Purchases of materials and fuel	"	25,358	24,764	43,049	6,872	38,506	138,549
Stocks of materials and fuel	"	7,622	9,064	4,231	1,333	10,691	32,941
Cost of materials and fuel used	"	- 1,752	- 2,173	+ 674	+ 38	- 404	- 3,617
Payment for work done on materials given out	"	27,109	26,937	42,375	6,835	38,910	142,166
Payment for transport	"	19,378	12,388	7,866	3,114	12,472	55,219
Net output	"	83	69	535	94	391	1,173
Average number of employees	No.	21,327	39,334	54,431	13,920	66,343	195,355
Total employment (a)	"	21,010	33,062	36,796	10,490	63,526	164,884
Net output per person employed (a)	"	11,501	15,774	16,679	4,882	27,691	76,527
Wages and salaries	£'000	32,511	48,836	53,475	15,372	91,224	241,418
Capital expenditure	£	656	805	1,018	906	727	809
New building work (b)	"	10,967	18,268	19,882	5,458	32,561	87,136
Plant and machinery	"	6,828	8,599	9,647	2,898	15,774	43,747
Vehicles	"	1,405	460	325	236	1,116	3,543
Disposals	"	1,206	993	1,800	540	2,887	7,426
Acquisitions (b)	"	33	15	29	25	208	309
Disposals	"	208	133	73	59	246	719
Acquisitions (b)	"	43	19	14	15	48	139

(a) Excluding outworkers and including working proprietors.

(b) Excluding expenditure at establishments not yet in production.

Sales of the principal products of the industry, including sales of these products by establishments classified to other industries

Larger establishments in the United Kingdom

TABLE 5

	1951		1954		Entries
	Quantity	Value	Quantity	Value	
Aircraft, new, complete	592	12,926	504	21,100	10
Aero-engines, new					
Piston					
Complete			1,024	4,102	5
Parts (excluding sparking plugs and other ignition equipment)			..	21,256	28
Gas turbine and jet propulsion		34,590			
Complete			3,772	53,439	8
Parts			..	25,463	40
Aircraft re-conditioned, complete			81	1,777	8
Aero-engines re-conditioned, complete		196 (a)	347	741	7
Airframes (b)			1,616	63,605	17
Propellers					
Complete			2,650	2,080	8
Parts			..	1,511	5
Undercarriages		66,401	No. of sets	2,308	6
Aircraft spares not elsewhere specified, other than sparking plugs and other ignition equipment			..	45,099	147
Other aircraft accessories and parts not elsewhere specified			..	8,378	77
Parachutes			Number		
Complete	16,933	414	40,305	653	6
Parts and accessories			..	192	..
Gliders and sailplanes, complete and parts thereof		360	..	639	7
Development and experimental work including work on prototype aircraft, etc. for which payment is receivable (c)		27,983		56,223	54
Repair work, modifications, conversions, etc. (c)		14,469		26,405	79
Work done for the trade or on commission (c)		9,964		27,870	108
Total		167,304		364,414	..
Sales in other industries (see Table 6)		10,704		25,941	..
Principal products of this industry sold by establishments in the industry		156,601		338,473	170

(a) So far as recorded separately.

(b) Including complete aircraft fitted with engines, instruments and other materials supplied by and remaining the property of H.M. Government; the value of such engines, instruments, etc. is excluded.

(c) Amount charged.

Sales of principal products of the industry by establishments
classified to other industries

Larger establishments in the United Kingdom

TABLE 6

	1954			Principal industries in which produced (a)
	Quantity	Value £'000	Entries Number	
Aero-engines, complete and parts	..	13,360	27	3G, 3I, 4I, 4K
Airframes, propellers and parts, undercarriages, spare parts of aircraft, accessories and parts not separately distinguished	..	9,811	127	3I, 3M, 4I, 5E
Parachutes, complete and parts and accessories	..	358	5	5E, 5H, 5J, 7H
Development and experimental work, including work on prototype aircraft, etc. for which payment was receivable (b)		166	..	3I, 5E, 12A
Repair work, modifications, conversions, etc. and work done for the trade or on commission (b)		2,245	24	
Total		25,941	..	

(a) The volume number and industry references given are to the industries shown in the list at the back of this report.

(b) Amount charged.

Sales in the industry of other than principal products

Larger establishments in the United Kingdom

TABLE 7

	1954	
	Quantity	Value £'000
Motor vehicles and parts and accessories	..	7,244
Plant and machinery, and parts	..	2,585
Machine tools and parts	..	2,278
Other metal goods (excluding scrap)	..	4,543
Other goods	..	580
Waste products	Th.tons	
Aluminium and aluminium alloy scrap	6.0	588
	..	318
Iron and steel scrap	24.6	130
	..	236
Other waste products	..	497
Work done, including research and development work (other than on aircraft) (a)		2,352
Total		21,349

(a) Amount charged.

TABLE 8 - Total make of aero-engines

Larger establishments in the United Kingdom

The total number of aero-engines, including those made by establishments classified to other industries, was 4,581 in 1951 and 4,969 in 1954.

Purchases of materials and fuel, 1954

Larger establishments in the United Kingdom

TABLE 9

	Quantity	Cost
	Th.tons	£'000
Materials		
Steel		
Angles, sections, shapes, bars, rods, girders, beams, joists (not fabricated)	36.6	2,629
Castings in the rough or machined	9.5	2,548
Forgings (except drop forgings) in the rough or machined	9.4	3,013
Plates and sheets 1/8 in. thick and over (except tinned-, terne-, and black-plates and tinned- and terne- sheets) and hoop and strip (including tape) of all thicknesses	..	2,126
Other steel sheets and plates under 1/8 in. thick including electrical sheets	30.1	1,363
	..	208
Wrought tubes and fittings for wrought tubes, of iron and steel	5.6	1,197
	1.0	301
	..	77
Iron and steel not elsewhere specified, except finished parts and scrap	6.6	1,623
Non-ferrous metals in all forms, except finished parts and scrap		
Aluminium and aluminium alloys	22.2	10,198
	..	2,534
Brass and other copper alloys (including nickel silver and cupro nickel, but excluding all other nickel alloys)	2.1	791
	..	1,260
Copper	0.6	239
	..	30
	Th.cwt.	
Magnesium and magnesium alloys (a)	5.9	439
	..	680
Bolts, rivets, nuts, washers, screws, nails and tacks, etc.	..	2,278
Timber (excluding timber used for packaging purposes)	Th.cu.ft.	
Hardwood	186.5	114
	..	16
Softwood	198.6	205
	..	51
	Th.sq.ft.	
Plywood (including battenboard, blockboard and laminboard)	2,537.5	367
	Th.gal.	
Paint and varnish including emulsion paints, cellulose based paints and lacquers	457.2	654
	..	89
Woven piece goods	Th.sq.yds.	
Of cotton	214.7	65
Of linen	44.0	13
	..	4
Of other materials	769.1	260
	..	145
Plastic materials	Th.cwt.	
Synthetic resins and moulding powders	2.1	49
	..	12
Sheet, including plastic film, rods and tubes	5.7	285
	..	74
Rubber manufactures including tyres and tubes	..	1,298
Aircraft components and accessories for incorporation in new or repaired products	No.	
Aero-engines, new	529	3,238
Propellers and undercarriages	..	4,299
Parts of aero-engines not elsewhere specified (other than sparking plugs and other ignition equipment)	..	17,156

TABLE 9 (contd.)

	Quantity	Cost £'000
Materials (contd.)		
Aircraft components and accessories for incorporation in new or repaired products (contd.)		
Ball and roller bearings and parts thereof	..	1,517
Electric motors, dynamos, magnetos, batteries and accumulators	..	1,309
Control and navigation instruments and parts except electronic	..	2,736
Radio, radar and other electronic equipment	..	1,570
Pumps, air and gas compressors, and valves for liquids and gases	..	1,679
Finished plastic components and fittings not elsewhere specified	..	183
Other aircraft components and accessories not stated elsewhere	..	15,733
Secondhand aircraft purchased for reconditioning	..	1,119
Secondhand aero-engines, purchased for use or for reconditioning and resale	..	1,149
Packaging materials	..	2,574
Replacement parts for firms' machinery, plant and vehicles	..	12,708
Consumable tools bought as replacement including engineers' small tools, jigs, fixtures and measuring instruments	..	16,233
All other purchased materials	..	7,270
Unclassified materials	..	
Fuel and electricity		
	Th. tons	
Coal	259.4	1,107
Coke	47.1	269
	..	90
Liquid fuels (including creosote/pitch mixtures)		
	Th. gal.	
For use in internal combustion engines		
Motor spirit (petrol) for use in road vehicles and derv. fuel	2,414	469
	..	54
Other	30,795	2,684
	..	1,671
For burning in furnaces, boilers, kilns, etc.	15,738	632
	..	159
Gas purchased		
	Th. therms	
From Gas Boards and other sources, including other departments of the same firms	10,746	601
	..	163
Electricity purchased (b)		
	Th. kWh.	
From Electricity Boards	432,539	2,248
	..	489
From other sources, including other departments of the same firms	5,069	40
All other purchased fuel		168
Total cost		138,549

(a) So far as recorded separately.

(b) Owing to the risk of disclosure of information relating to individual firms the total quantity of electricity generated in firms' own establishments cannot be given.

Average number of employees, and wages, salaries and superannuation payments (a)

Larger establishments in the United Kingdom

TABLE 10

	1951	1954
	Number	Number
Average number of employees		
Operatives	109,215	164,884
Administrative, technical and clerical employees	48,234	76,527
Total	157,449	241,411
	£'000	£'000
Wages and salaries paid to		
Operatives	45,325	87,136
Administrative, technical and clerical employees	22,839	43,747
Total	68,164	130,882
	£	£
Wages and salaries per head		
Operatives	415	528
Administrative, technical and clerical employees	474	572
		£'000
Superannuation and other pension funds for employees and dependents (b)		
Employers' contributions	..	2,262
Employees covered	..	Number 116,523 £'000
Pension, etc. payments to former employees and dependents (b)	..	117

(a) The following persons, not included above, were also employed by larger establishments in the industry ('other workers' includes, for example, employees engaged in merchanting):

	1951	1954
	Number	Number
Canteen workers		
Males	201	233
Females	1,436	1,818
Total	1,637	2,051
Other workers		
Males	1,102	414
Females	260	97
Total	1,362	511
Total excluded employees	2,999	2,562

(b) The figures given relate to larger establishments in Great Britain only.

Employment in a specified week (a)

Larger establishments in the United Kingdom

TABLE 11

	1951			1954		
	Males	Females	Total	Males	Females	Total
Working proprietors	5	-	5	7	-	7
Operatives	102,104	10,739	112,843	152,750	14,608	167,358
Administrative, technical and clerical employees	36,192	14,030	50,222	57,738	20,720	78,458
Total employees	138,296	24,769	163,065	210,488	35,328	245,816

(a) Week ended September 22, 1951, or October 30, 1954.

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- D. Slate Quarries and Mines
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- H. Glass Containers
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