

THE PAPER, PRINTING AND STATIONERY TRADES GENERAL REPORT

The following report summarises in comparable form the principal results of the Censuses of 1930 and 1924 for the paper, printing and stationery group of trades, of which detailed particulars are given in the succeeding reports on individual trades. The particulars in this report relate to the United Kingdom except where otherwise specified.

Principal results

The main particulars obtained for 1930 and 1924 are set out in the following table:—

Trade	Gross output (selling value of goods made and value of work done)	Cost of materials used and amount paid for work given out	Net output (excess of Col. (2) over Col. (3))	Average number of persons employed (except out-workers)	Net output per person employed	Power available*	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	
	£'000	£'000	£'000	No.	£	Thous. H.P.	
1 Paper ...	1930	38,356	24,934	13,422	53,562	250	496·6
	1924	36,935	23,975	12,960	51,234	253	287·4
2 Wallpaper ...	1930	3,130	1,389	1,741	5,769	302	5·6
	1924	2,833	1,274	1,559	4,562	342	4·4
3 Printing, Book-binding, etc.†	1930	57,172	19,664	37,428‡	170,072	220‡	123·5
	1924	57,368	19,660	37,633§	171,017	220§	96·2
4 Printing and Publication of Newspapers and Periodicals ...	1930	51,606	14,928	36,678	71,434	513	109·2
	1924	45,876	14,168	31,708	58,041	546	64·7
5 Manufactured Stationery† ...	1930	14,041	6,810	7,231	37,839	191	19·3
	1924	9,321	4,499	4,822	27,293	177	9·8
6 Cardboard Box ...	1930	10,752	5,280	5,472	33,668	163	18·5
	1924	7,155	3,241	3,914	23,287	168	9·7
7 Pens, Pencils and Artists' Materials	1930	2,316	979	1,337	7,659	175	5·9
	1924	2,115	827	1,288	7,215	179	4·2
TOTAL—UNITED KINGDOM ...	1930	177,373	73,984	103,309	380,003	272	778·6
	1924	161,603	67,644	93,884	342,649	274	476·4
England and Wales† ...	1930	156,270	64,172	92,018	332,764	277	633·3
	1924	141,785	58,661	83,049	298,502	278	384·8
Scotland† ...	1930	19,419	9,146	10,273	42,405	242	138·7
	1924	18,128	8,286	9,842	39,420	250	84·9
Northern Ireland	1930	1,684	666	1,018	4,834	211	6·6
	1924	1,690	697	993	4,727	210	6·7

* Total capacity of prime movers and of electric motors driven by purchased electricity.

† Owing to the possible disclosure of information relating to individual firms, particulars relating to the Manufactured Stationery Trade in Northern Ireland have been included with those for the Printing, Bookbinding, etc., Trades for both 1930 and 1924. For the same reason, the figures relating to the Wallpaper Trade in Scotland for both years have been included in the aggregates for England and Wales.

‡ Excluding estimated Excise duty (£80,000).

§ Excluding estimated Excise duty (£75,000).

Comparability of results.—A minor difference in scope, which brought within this group of trades the output, etc., of about 1,400 persons that were included in other groups for 1924, resulted from the receipt of a larger number of separate returns in respect of cardboard box production from manufacturing firms supplying their own requirements of these articles (see page 505). This change somewhat disturbs the comparability of the figures shown for the Cardboard Box Trade but its effect on the group aggregates is negligible. The assignment of certain returns relating to the manufacture of paper bags, tubes, etc., to the Manufactured Stationery Trade for one year and to the Paper Trade for the other (see page 491) affects comparisons between the 1930 and 1924 results for these two trades but not those for the group as a whole. Certain firms that made metal boxes were included in the Printing, etc., Trade for 1924 and in the Hardware, Hollow-ware, etc., Trade for 1930 (see page 467); about 3,500 persons were employed by these firms and the change affects comparisons between the total figures for the Printing, etc., Trade and for the whole group. The inclusion in the Printing, Bookbinding, etc., Trades of firms engaged in engraving, electrotyping, etc., which were included in the Final Report on the Third Census in the Typefounding, Electrotyping, etc., Trades has no effect on the comparability of the results for the two years.

The particulars given for Northern Ireland apply, for 1924, to all firms, irrespective of size, but only to firms employing more than five persons for 1930. This difference is, however, of no importance in relation to the totals shown for the group or for any of the individual trades.

Deficiencies due to the exclusion of small firms in Great Britain.

—Particulars of the numbers of persons recorded for 1930 and 1924 by firms employing not more than ten persons on the average are given in each report, with details of the chief classes of goods made and work done by these firms in the earlier year. Taking the paper, printing and stationery group as a whole, 31,349 persons were stated to have been employed by firms of this class in 1930 and 23,460 in 1924.

About 440 firms to which schedules were sent furnished no information at the 1930 Census and these outstanding cases consisted almost entirely of businesses in which fewer than ten persons were employed. The number of firms that furnished no particulars at the previous Census was 1,227. Assuming that the average number of employees was the same in these cases as that shown by other small firms, the total number of persons employed by all small firms in this group was roughly 33,500 in 1930 and 29,300 in 1924, representing an increase in 1930 of about 14 per cent.

The great majority of the small firms in this group were engaged in printing and kindred work, and it is estimated that about 14 per cent. of all persons engaged in the Printing, Bookbinding, Engraving, etc., Trades in 1930 were employed in these small establishments; in the Manufactured Stationery Trade, small firms employed about 6 per cent. of the total staff recorded, but in no other trade did the proportion exceed 5 per cent.

Periods covered by firms' returns

As explained in Note 1 on page xi, firms were given the option of making returns for the calendar year 1930 or for their period of account most closely corresponding thereto, provided that the ending date of that period was not later than 31st March, 1931. The following table shows, for the paper, printing and stationery group of trades as a whole, the total number of returns and the numbers of persons employed according to the periods covered by the returns received.

Returns in respect of 12 months ended	Number of returns		Persons employed	
	Number	Per cent. of total	Average number	Per cent. of total
April, 1930	68	1·7	5,835	1·6
May, 1930	56	1·4	3,431	0·9
June, 1930	276	6·8	19,947	5·3
July, 1930	46	1·1	3,077	0·8
August, 1930	56	1·4	8,562	2·3
September, 1930	197	4·9	25,110	6·7
October, 1930	83	2·1	12,821	3·4
November, 1930	61	1·5	9,941	2·6
December, 1930	2,266	56·3	199,496	53·2
January, 1931	89	2·2	7,518	2·0
February, 1931	75	1·9	13,711	3·7
March, 1931	753	18·7	65,720	17·5
TOTAL	4,026	100·0	375,169	100·0

The above particulars relate only to firms in Great Britain, a similar analysis of the returns furnished at the Census of Northern Ireland not being available.

The mean terminal date of all returns received at the Fourth Census was about the end of the third week in December, 1930. Particulars of the returns relating to the calendar year, which formed over 56 per cent. of the total number received, are shown for each trade in the following table:—

Returns covering the twelve months ended December 31st, 1930

Trade	Number of returns		Persons employed	
	Number	Per cent. of total	Average number	Per cent. of total
Paper	112	45	23,814	45
Wallpaper	7	41	664	12
Printing, Bookbinding, etc.	1,301	54	84,345	50
Printing and Publication of News- papers, etc.	282	62	42,432	61
Manufactured Stationery	235	62	24,107	64
Cardboard Box	299	64	18,907	57
Pens, Pencils, etc.	30	64	5,227	68
TOTAL	2,266	56	199,496	53

Production

Gross output.—The gross output figures do not provide a satisfactory representation of the position of different trades in relation to each other, as the usual basis on which the output of manufacturing trades was valued, viz., the selling value of the products, is not applicable to printing and publishing operations; further, among the manufacturing trades, the gross output value is largely dependent on the value of the materials used. As between one year and another, the figures for the same trades are affected by changes in manufacturing costs. Duplication in the gross output value is also a material factor in comparing the results given for different trades and, in so far as its amount varied, affects also the figures for the same trade for different years.

Net Output.—The net output figure eliminates any overstatement due to the factor of duplication, but its utility as a basis of comparison between different trades in the same year is subject to the reservations mentioned in the Introductory Notes (pages x and xi); moreover, the relationship between the net output reported by a given trade for different years is affected by fluctuations in the various items which the figure comprises, viz., wages and salaries, rent, sales expenses, etc., as well as depreciation and profits. Measurement of production by net output is therefore only a rough guide and the important qualifications to which the results are subject should not be overlooked. In this connection attention is drawn to the estimate made of the relative volume of production in the two years for the group as a whole (see page 427). Net output per head eliminates the variable factor of the numbers of persons employed, but the use of figures of net output per head for purposes of comparison is also subject to the qualifications mentioned.

The table on page 423 shows that the total value of the net output of this group of trades was greater in 1930 than in 1924 by £9,425,000, or by 10 per cent. Except for the Printing, Book-binding, etc., Trade, in which there was a negligible decrease, net output increased in each of the individual trades, though for the reasons given on page 424 the extent of the increase is somewhat understated in the case of the Paper Trade and overstated for the Manufactured Stationery and Cardboard Box Trades. Over half of the total increase was recorded in respect of Newspaper, etc., Printing and Publishing, the increase in this trade amounting to £4,970,000, or 16 per cent.

Net output per employee was higher by about 8 per cent. in the Manufactured Stationery Trade, while for the Printing, Bookbinding, etc., Trades net output per employee was the same in each year. Each of the remaining trades recorded some decline in 1930, the figure for the Wallpaper Trade being lower by about 12 per cent. and that for the Printing and Publication of Newspapers, etc., by 6 per cent. In both years net output per employee in England and Wales exceeded that in Scotland by over 10 per cent. and that in Northern Ireland by over 30 per cent.

Volume of production.—The following table shows, for each principal class of output with which this group of trades is concerned, the total value recorded for the year 1930, and the result of a re-valuation of similar output in 1924, based so far as possible on the average values shown by the returns for 1930. A quantitative comparison is not available in respect of printing and publishing processes nor for a considerable proportion of the output of stationery and other articles of paper and board, and the estimates given for 1924 in terms of 1930 values are therefore only approximate. They are believed, however, to represent the facts within a comparatively small margin of error. The figures for both years represent the total recorded output of private firms, whether returned by firms in the trade chiefly concerned in the class of production specified, or by firms in other trades. These particulars relate only to production in Great Britain.

Kind of output	Total production in Great Britain			1930 as a percentage of 1924
	1930	1924		
	As returned	As returned	At 1930 average values	
	£'000	£'000	£'000	Per cent.
Paper and board	36,118	34,067	29,714	122
Wallpaper	3,128	2,821	2,674	117
Books and other printed matter (except newspapers and periodicals)	51,282	49,914	48,000	107
Newspapers and periodicals ...	52,867	47,711	44,700	118
Manufactured stationery	17,258	13,521	13,500	128
Cardboard boxes	12,028	8,724	7,974	151
Pens, pencils and artists' materials	2,150	1,992	2,000	107
TOTAL	174,831	158,750	148,562	118

It will be observed that the estimated increase of 18 per cent. in the total volume of output in 1930 is substantially greater than the recorded increase in the net output value shown by this group of trades, viz., 10 per cent. If the total shown above for 1930 and the re-valued total for 1924 are divided by the number of persons employed in these trades in the two years, the resulting figure is £466 per employee for 1930 and £440 for 1924, an increase of about 6 per cent. in the later year, compared with the fractional decline recorded on the basis of net output.

Number of establishments

The following table shows the number of separate establishments covered by the results for 1930, and the total number of returns received for 1930 and 1924. In the case of a firm owning more

than one establishment situated in the same Census area and engaged in the same Census Trade, a combined return covering all such establishments was usually accepted, provided the number of operatives employed at each establishment was shown separately. The number of establishments reported was thus greater than the number of returns received.

Trade	1930		1924
	Number of establishments	Number of returns	Number of returns
Paper	269	248	302
Wallpaper	31	17	17
Printing, Bookbinding, etc. ...	2,564	2,414	2,813
Printing and Publication of Newspapers, etc.	608	458	448
Manufactured Stationery	422	377	309
Cardboard Box	486	465	386
Pens, Pencils, etc.	54	47	50
TOTAL	4,434	4,026	4,325

These figures relate only to firms in Great Britain, the number of establishments not being recorded separately in the report on the Census of Production of Northern Ireland.

Size of firms

In the following table the main particulars recorded at the Census of 1930 for the Paper, Printing and Stationery Trades are grouped according to the average numbers of persons shown in the returns. The particulars given in this section relate to firms in Great Britain only.

Size of firm (average numbers employed)	Number of returns	Gross output	Cost of materials	Amount paid for work given out	Net output*	Average number of persons employed (excluding out-workers)	Net output per person employed*
	No.	£'000	£'000	£'000	£'000	No.	£
11-24 ...	1,388	6,968	2,198	230	4,540	23,872	190
25-49 ...	1,113	12,414	4,152	335	7,927	38,868	204
50-99 ...	711	17,614	6,585	343	10,679	49,332	216
100-199 ...	421	25,337	10,348	394	14,595	60,447	241
200-299 ...	160	16,572	7,606	128	8,838	38,879	227
300-399 ...	79	11,830	5,155	182	6,493	27,103	240
400-499 ...	46	11,304	5,404	90	5,810	20,493	283
500-749 ...	55	20,072	9,597	191	10,254	33,588	305
750-999 ...	23	9,624	3,203	32	6,389	19,972	320
1,000-1,499 ...	11	6,902	2,393	3	4,463	13,134	340
1,500 and over	19	37,052	14,638	111	22,303	49,481	451
TOTAL ...	4,026	175,689	71,279	2,039	102,291	375,169	273

* Exclusive of estimated Excise duty on playing cards.

The average number of employees recorded on each return was 93. Nearly 80 per cent. of the returns related to establishments employing less than 100 persons, but only about 30 per cent. of the total number of employees was recorded by these establishments and 23 per cent. of the net output. The figures of net output per person employed increased progressively from the smaller to the higher ranges of size, with the exception of the group of firms employing from 100 to 199 persons, in which the net output per head was higher than in the groups on either side of it. The increase was due to the specially high average returned for this group in the Paper Trade and the Newspaper and Periodical Printing and Publishing Trade. Net output per employee engaged in the printing and publication of newspapers and periodicals was considerably higher in each range of size than in any other of the specified trades and the progressive increase shown for the whole group in the six largest ranges is due in part to the importance of the returns for this trade. Figures for each trade are shown separately in the following table.

Net output per person employed

Size of firm (average numbers employed)	Paper	Wall-paper	Printing, Book-binding etc.*	Printing and Publication of Newspapers etc.	Manu-factured Sta-tionery	Card-board Box	Pens, Pencils, etc.
	£	£	£	£	£	£	£
11-24 ...	224	149	192	254	163	135	179
25-49 ...	237		203	301	180	121	187
50-99 ...	234	195	218	336	177	137	231
100-199 ...	252		227	526	186	162	178
200-299 ...	207	314	222	412	205	161	131
300-399 ...	237		238	376	169	177	185
400-499 ...	291	196	219	496	194	199	
500-749 ...	239		238	577		166	
750-999 ...	341	235	247	683	236	233	—
1,000-1,499 ...			643	643			
1,500 and over	341	235	643	643	236	233	—
TOTAL ...	250	302	221	518	191	163	175

* Exclusive of estimated Excise duty on playing cards.

Regional distribution

In the following table the principal aggregates for the paper, printing and stationery group as a whole, as recorded at the Censuses of 1930 and 1924, are grouped according to the areas into which the United Kingdom has been sub-divided:—

Area	Number of returns	Gross output	Net output*	Average number of persons employed (excluding outworkers)	Net output per person employed*	
				No.	£	
1. Greater London ...	1930	1,356	71,522	45,561	145,800	312
	1924	1,450	65,972	41,443	131,684	315
2. Lancashire with North Cheshire and the Glossop and New Mills District of Derbyshire ...	1930	589	27,111	14,688	51,555	285
	1924	636	24,289	13,013	45,756	284
3. The West Riding of Yorkshire, with the City of York ...	1930	236	7,736	4,657	18,376	253
	1924	301	8,185	4,607	18,664	247
4. Northumberland, Durham and the Cleveland district of Yorkshire ...	1930	95	3,071	1,621	7,515	216
	1924	111	2,430	1,537	5,794	265
5. Warwickshire, Worcestershire and Staffordshire ...	1930	318	8,329	5,209	23,108	225
	1924	326	7,298	4,526	20,755	218
6. The rest of England (except Monmouthshire)†	1930	956	36,864	19,422	82,620	235
	1924	955	31,381	16,757	71,221	235
7. Glamorganshire, Monmouthshire and Carmarthenshire ...	1930	47	1,294	687	2,995	229
	1924	55	1,848	990	3,683	269
8. The rest of Wales ...	1930	20	343	173	795	217
	1924	26	382	176	945	186
TOTAL—England and Wales† ...	1930	3,617	156,270	92,018	332,764	277
	1924	3,860	141,785	83,049	298,502	278
9. Lanarkshire, Renfrewshire and Dumbartonshire ...	1930	169	7,836	4,549	16,784	271
	1924	200	6,188	3,818	14,614	261
10. The rest of Scotland ...	1930	240	11,583	5,724	25,621	223
	1924	265	11,940	6,024	24,806	243
TOTAL—Scotland† ...	1930	409	19,419	10,273	42,405	242
	1924	465	18,128	9,842	39,420	250
TOTAL—Great Britain	1930	4,026	175,689	102,291	375,169	273
	1924	4,325	159,913	92,891	337,922	275
11. Northern Ireland ...	1930	92	1,684	1,018	4,834	211
	1924	114	1,690	993	4,727	210
TOTAL—UNITED KINGDOM ...	1930	4,118	177,373	103,309	380,003	272
	1924	4,439	161,603	93,884	342,649	274

* Exclusive of estimated Excise duty on playing cards.

† See footnote (†) to table on page 423.

Except for Wales and the West Riding of Yorkshire, employment in this group of trades increased in each of the specified areas in 1930. About 38 per cent. of the total staff and about 44 per cent. of the total net output in both years was recorded by establishments in Greater London, and in this area net output per employee was higher by 15 per cent. than the general average for the United Kingdom. As between the two divisions of Great Britain there was no appreciable change in the two years, about 11 per cent. of the total number of employees being recorded by establishments in Scotland in each year.

Employment

The following table shows the average numbers of male and female operatives and administrative, technical and clerical staff in each of the Paper, Printing and Stationery Trades in the two censal years.

Average numbers (excluding outworkers) employed in 1930 and 1924 in the several Paper, Printing and Stationery Trades

Trade	Operatives		Administrative, technical and clerical staff		Total	
	Males	Females	Males	Females		
Paper ...	1930	37,079	12,401	3,076	1,006	53,562
	1924	34,706	13,148	2,501	879	51,234
Wallpaper ...	1930	3,445	1,564	556	204	5,769
	1924	2,965	942	507	148	4,562
Printing, Bookbinding, etc.* ...	1930	87,451	58,994	15,184	8,443	170,072
	1924	86,222	61,387	15,418	7,990	171,017
Printing and Publication of Newspapers, etc. ...	1930	46,065	3,554	16,876	4,939	71,434
	1924	36,783	3,452	13,849	3,957	58,041
Manufactured Stationery* ...	1930	10,797	20,744	3,557	2,741	37,839
	1924	7,294	15,388	2,657	1,954	27,293
Cardboard Box ...	1930	7,125	23,808	1,658	1,077	33,668
	1924	4,988	16,531	1,133	635	23,287
Pens, Pencils, etc. ...	1930	2,100	4,718	483	358	7,659
	1924	1,941	4,545	443	286	7,215
TOTAL—UNITED KINGDOM	1930	194,062	125,783	41,390	18,768	380,003
	1924	174,899	115,393	36,508	15,849	342,649
England and Wales*	1930	171,893	108,287	36,740	15,844	332,764
	1924	154,070	98,908	32,196	13,328	298,502
Scotland* ...	1930	19,873	15,919	3,998	2,615	42,405
	1924	18,459	14,910	3,790	2,261	39,420
Northern Ireland ...	1930	2,296	1,577	652	309	4,834
	1924	2,370	1,575	522	260	4,727

* See footnote (*) to table on page 423.

With the addition of the numbers of employees recorded by firms employing not more than ten persons (see page 424), the average numbers in employment in this group of trades amounted in the aggregate to 411,352 in 1930 and 366,109 in 1924, an increase of about 12 per cent., and this result would not be reduced to less than 11 per cent. by the inclusion for each year of the employees of the firms from which no returns were received.

Distribution by status.—The total number of *operatives* as shown in the above table increased in 1930 by 29,553 (10 per cent.) and that of *administrative, technical and clerical staff* by 7,801 (15 per cent.). Except for the Printing, Bookbinding, etc., Trades, which returned substantially the same totals for each year, an increase in the employment of operatives was reported by each trade. In the Newspaper, etc., Printing and Publishing Trade the operative staff increased by 23 per cent. The numbers of administrative, technical and clerical employees were higher in every trade, without exception.

Distribution by sex.—The proportion of males to females employed in this group remained substantially unchanged at about 1.6 to 1. The proportion of males in the total number of operatives was larger in 1930 than in 1924, while in the administrative, technical and clerical classes females increased in relative importance. It may be noted that while females formed the majority of the operatives in the manufacture of stationery, cardboard boxes, and pens, pencils and artists' materials, comparatively few female operatives are employed in connection with the printing and publishing of newspapers; in the administrative, technical and clerical staff also, the proportion of female employees in the latter trade was smaller than in any other trade included in this group.

Distribution by age.—The following table classifies by age the numbers of persons (excluding outworkers) of each class recorded as employed in the various Paper, Printing and Stationery Trades in the weeks ended 18th October, 1930 and 1924:—

Numbers of persons (excluding outworkers) employed in the weeks ended 18th October, 1930 and 1924

Trade	Operatives				Administrative, technical and clerical staff				
	Males		Females		Males		Females		
	Under 18	Total	Under 18	Total	Under 18	Total	Under 18	Total	
Paper ...	1930	2,716	36,849	2,992	12,325	232	3,076	143	1,006
	1924	2,948	35,020	3,191	13,327	207	2,501	105	879
Wallpaper ...	1930	663	3,673	743	1,667	66	556	54	204
	1924	536	3,100	368	1,138	65	507	26	148
Printing, Book-binding, etc.*	1930	12,125	87,655	17,736	59,136	1,248	15,184	1,592	8,443
	1924	12,224	87,134	18,563	62,356	1,369	15,418	1,297	7,990
Printing and Publication of Newspapers, etc. ...	1930	2,940	45,980	623	3,548	1,939	16,876	889	4,939
	1924	2,863	37,638	757	3,665	1,488	13,849	515	3,957
Manufactured Stationery*	1930	1,944	10,928	7,152	20,994	325	3,557	635	2,741
	1924	1,217	7,480	5,061	15,980	279	2,657	402	1,954
Cardboard Box ...	1930	1,050	7,206	7,476	24,079	107	1,658	186	1,077
	1924	817	5,044	4,638	16,944	71	1,133	102	635
Pens, Pencils, etc.	1930	404	2,062	1,370	4,634	25	483	67	358
	1924	404	1,962	1,376	4,491	30	443	53	286
TOTAL ...	1930	21,842	194,353	38,092	126,383	3,942	41,390	3,566	18,768
	1924	21,009	177,378	33,954	117,901	3,509	36,508	2,500	15,849

* See footnote (*) to table on page 423.

The total number of young persons increased from 60,972 in 1924 to 67,442 in 1930, being 18 per cent. and 17 per cent. respectively of all employees. The larger total for 1930 was due principally to increased employment of young persons in the Manufactured Stationery and the Cardboard Box Trades; in the Printing, Bookbinding, etc. Trades, which gave employment to the largest number of young persons in both years, there was a small decline in 1930 in the total for this class. The largest proportion of young persons in 1930 was recorded for the Manufactured Stationery Trade, the proportion having increased from 25 per cent. in 1924 to 26 per cent. in 1930.

Monthly fluctuations in employment.—Firms were required to state the actual numbers of operatives employed in the middle week of each month of the periods covered by their returns, and the following table shows the monthly aggregates for each of the trades in the paper, printing and stationery group:—

Operative staff (excluding outworkers) in the Paper, Printing and Stationery Trades in 1930 and 1924

Middle week in	1930		1924
	Total number	Number employed by firms furnishing returns in respect of the twelve months ended December*	Total number
(1)	(2)	(3)	(4)
January ...	319,565	166,110	285,345
February ...	319,060	166,662	285,618
March ...	319,672	167,525	287,310
April ...	320,121	167,562	288,362
May ...	320,744	168,036	288,160
June ...	319,200	167,023	290,423
July ...	318,526	166,575	289,343
August ...	316,895	165,901	286,802
September ...	319,424	166,721	291,713
October ...	320,736	167,024	295,279
November ...	322,388	167,507	296,899
December ...	321,803	166,753	298,248
AVERAGE FOR THE TWELVE MONTHS ...	319,845	166,950	290,292

* Great Britain only.

The figures in columns (2) and (4) represent the aggregates recorded in all returns, irrespective of the periods to which they related*; thus, for example, in the case of returns covering the

* See Introductory Notes, page xi.

twelve months ended 31st March, 1931, the figures recorded in column (2) for the first three months were the numbers employed in that period of the year 1931, while the numbers at work in the last three months of the year 1929 were stated in returns covering the twelve months ended 30th September, 1930. A more accurate representation of the fluctuations in employment in the year 1930 is provided by the figures in column (3), which show the numbers recorded in returns that related to the calendar year.

The figures recorded by these firms show that there was a progressive increase in employment from the beginning of 1930 up to May, at which time employment reached its highest figure for the year. Employment fell off in each of the following three months, reaching its lowest level in August, and recovered in the period September to November with a further decline in the last month of the year. The variations month by month in 1930 were not considerable, the figures for May and for August being less than 1 per cent. higher and lower respectively than the average for the year. In 1924 the numbers employed tended to increase throughout the year.

Outworkers.—The following table shows the numbers of outworkers employed in 1930 and 1924 in the paper, printing and stationery group of trades.

Average numbers of outworkers employed

Trade	1930			1924		
	Males	Females	Total	Males	Females	Total
Manufactured Stationery	2	306	308	26	182	208
Cardboard Box ...	5	535	540	6	784	790
Pens, Pencils, etc. ...	1	18	19	—	1	1
TOTAL ...	8	859	867	32	967	999

Wages

The following table summarises the information available as to the amount of wages paid by firms in the Paper, Printing and Stationery Trades in 1930 and 1924. The particulars of wages shown in column (8) are those ascertained by the Ministry of Labour as a result of the voluntary inquiries undertaken by that Ministry into wages and hours of labour in the United Kingdom.

The numbers of operatives shown in columns (1) and (3) are those returned to the Census of Production as employed by the firms concerned in the weeks ended 18th October, 1930 and 1924, and the average during the year 1930 respectively. The amount of wages paid shown in column (8) was the aggregate returned to the Ministry of Labour in respect of the same firms. The proportion

of each trade represented by the firms that furnished particulars of their wage bills is shown in columns (2) and (4) based on the numbers of operatives employed and, in column (7), on net output. The average numbers of operatives employed during the year 1924, corresponding to those given in column (3) in respect of 1930, are not available.

It has not been possible to adjust the 1924 figures to provide for differences in the 1930 classification of certain classes of production (e.g. type-founding—see page 424), but any such change has no material effect on the comparability of the figures. The particulars for both years relate only to firms in Great Britain.

Trade	Firms furnishing				
	Operative staff employed				
	During week ended 18th October (1)	Proportion of trade (2)	Average during year (3)	Proportion of trade (4)	
	No.	Per cent.	No.	Per cent.	
Paper	1930	34,088	70.0	34,089	69.6
	1924	35,751	74.7	*	—
Wallpaper	1930	4,511	84.5	4,218	84.2
	1924	3,666	86.5	*	—
Printing, Bookbinding, etc.	1930	87,901	60.6	87,625	60.6
	1924	96,589	65.5	*	—
Printing and Publication of Newspapers, etc.	1930	30,386	62.7	30,080	62.0
	1924	26,513	65.7	*	—
Manufactured Stationery ...	1930	14,622	45.8	14,493	46.0
	1924	14,500	61.8	*	—
Cardboard Box	1930	18,005	58.6	17,865	58.7
	1924	13,121	61.1	*	—
Pens, Pencils, etc. ...	1930	2,352	35.1	2,378	34.9
	1924	3,057	47.4	*	—
TOTAL	1930	191,865	60.6	190,748	60.4
	1924	193,197	66.3	*	—

* Details not available.

Trade	returns of wages				
	Gross output (5)	Net output		Wages paid	
		Amount (6)	Proportion of trade (7)	Amount (8)	Proportion of net output (9)
	£'000	£'000	Per cent.	£'000	Per cent.
Paper.	26,720	9,273	70.0	4,451	48.0
	*	9,642	75.2	4,328	44.9
Wallpaper.	2,684	1,552	89.1	492	31.7
	*	1,366	87.6	371	27.2
Printing, Book-binding, etc.	34,721	22,716†	61.3	12,395	54.6
	*	24,316†	65.3	13,275	54.6
Printing and Publication of Newspapers, etc.	34,398	24,402	67.3	7,115	29.2
	*	20,276	64.8	6,175	30.5
Manufactured Stationery.	5,839	2,957	40.9	1,376	46.5
	*	3,183†	66.0	1,405	44.1
Cardboard Box.	6,782	3,435	63.6	1,639	47.7
	*	2,095	54.4	1,051	50.2
Pens, Pencils, etc.	847	469	35.1	225	48.0
	*	666	51.7	274	41.1
TOTAL.	111,991	64,804†	63.4	27,693	42.7
	*	61,544†	66.3	26,879	43.6

† Excludes estimated Excise duty on playing cards.

In 1924, the average number of operatives employed by all firms in the group was lower than the number recorded for the week ended 18th October by 1·8 per cent. but the difference between these two figures was considerably less in 1930, the former being in defect by only 0·3 per cent. If allowance is made for this factor it appears that the average numbers to which the wages figures refer were not substantially different in the two years.

The sample for which wages data are available covered 60·4 per cent. of the average number of operatives employed by the whole group in 1930 and a proportion probably in excess of 66 per cent. for 1924, there being a decrease in 1930 in the proportion for each trade. The firms furnishing returns of wages had in the aggregate a substantially higher net output per operative in 1930 than the firms for which such particulars are not available. Only in respect of the Manufactured Stationery Trade was the opposite result recorded. For 1924, the net output per operative was similar for both sets of firms.

Wages in 1930 amounted to about £145 per operative in the group as a whole, this high average being largely due to the exceptional figure of £236 shown for the Printing and Publication of Newspapers and Periodicals. The corresponding average wage in 1924 may be estimated at about £141. The proportion which wages formed of net output increased in four of the seven trades in 1930, but the decrease in the large Newspaper, etc. Printing and Publishing Trade resulted in a decline from 43·6 to 42·7 per cent. in the proportion of wages to net output for the whole group. In that trade and in the Wallpaper Trade wages formed in each year a very low proportion of net output—roughly about 30 per cent.—in the former case due to the high net output per employee and in the latter to the relatively low average wage, £117 in 1930 and less in 1924.

Power

The particulars recorded at the Censuses of 1930 and 1924 in respect of power installed and employed in the paper, printing and stationery group of trades are shown in the following table:—

Power ordinarily in use and not in use in the Paper, Printing and Stationery Trades in 1930 and 1924

Type	Capacity ordinarily in use		Capacity in reserve or idle		Proportion in reserve or idle	
	1930	1924	1930	1924	1930	1924
PRIME MOVERS	Th. H.P.	Th. H.P.	Th. H.P.	Th. H.P.	Per cent.	Per cent.
Reciprocating steam engines	158·0	172·7	22·3	20·9	12·4	10·8
Steam turbines	181·6	45·2	83·8	12·9	31·6	22·2
Internal combustion engines:—						
Gas	13·7	23·4	6·3	7·0	31·5	23·0
Petrol, kerosene, or other light oils	0·5	0·6	0·8	0·8	61·5	57·1
Heavy oils	5·8	2·8	4·0	1·9	40·8	40·4
Water engines	7·1	6·3	0·5	0·6	6·6	8·7
TOTAL—Prime movers	366·7	251·0	117·7	44·1	24·3	14·9

Type	Capacity ordinarily in use		Capacity in reserve or idle		Proportion in reserve or idle	
	1930	1924	1930	1924	1930	1924
ELECTRIC GENERATORS	Th. Kw.	Th. Kw.	Th. Kw.	Th. Kw.	Per cent.	Per cent.
Driven by						
Reciprocating steam engines	38·8	32·4	13·0	11·8	25·1	26·7
Steam turbines	126·6	30·1	59·3	11·2	31·9	27·1
Internal combustion engines:—						
Gas	1·9	3·2	1·1	3·2	37·6	50·0
Petrol, kerosene, or other light oils	0·1	0·1	0·7	0·3	81·0	75·0
Heavy oils	3·2	1·7	2·3	1·7	42·2	50·0
Water engines	2·1	1·9	0·3	0·1	12·5	5·0
TOTAL—Electric generators	172·7	69·4	76·7	28·3	30·8	29·0
ELECTRIC MOTORS	Th. H.P.	Th. H.P.	Th. H.P.	Th. H.P.		
Driven by						
Electricity generated in same works	301·5	102·6	24·3	18·0	7·5	14·9
Electricity generated in other works under same ownership	3·2	—	*	—	—	—
Purchased electricity	271·1	164·7	23·1	16·6	7·9	9·2
TOTAL—Electric motors	575·8	267·3	47·4	34·6	7·6	11·5

* Less than 50 H.P.

The power generated by prime movers is required partly for direct application and partly for driving generators for the production of electrical energy. The electrical energy so produced may be used either for the purpose of driving electric motors or for heating, lighting and process purposes. Particulars of the power applied mechanically (i.e. directly) and electrically are given in the table on page 441.

The particulars of prime movers and electric generators shown in the above table are dominated by the returns for the Paper Trade, which was by far the most important of the trades in this group from the point of view of power equipment. The capacity of reciprocating steam engines in use declined by over 8 per cent. in 1930, but there was a substantial increase in the capacity of the steam turbines and in that of the electric generators driven thereby. The threefold increase shown for electric motors driven by energy generated in the firms' own works also represents substantially the position of the Paper Trade, but the increase in the capacity of motors in use driven by purchased electricity, which amounted to nearly 65 per cent., reflects the development in the use of purchased energy in all trades between the two years.

At the 1930 Census, firms were definitely informed that obsolete engines should not be recorded in their returns, and as no similar instruction was given at the previous Census, the figures for reserve or idle plant in the two years may not be precisely comparable. In any case, however, the proportion of reserve or idle plant does not

furnish a reliable measure of the activity of trade, since all engines that were in operation during the greater part of the period in which production was carried on were recorded as "ordinarily in use," irrespective of intermittent working.

The particulars furnished at the two Censuses by each of the trades included in the paper, printing and stationery group, in respect of prime movers, electric generators and electric motors installed, are shown in the following table:—

Power available in 1930 and 1924

Trade	Prime movers	Electric generators	Electric motors			All electric motors	
			Driven by electricity				
			Generated in same works	Generated in other works under same ownership	Purchased		
Thous. H.P.	Thous. Kw.	Thous. H.P.	Thous. H.P.	Thous. H.P.	Thous. H.P.		
Paper	1930	441.0	233.3	310.3	1.8	55.6	367.7
	1924	248.8	83.1	108.9	—	38.6	147.5
Wallpaper	1930	3.4	1.7	2.8	—	2.2	5.0
	1924	2.6	0.8	1.0	—	1.8	2.8
Printing, Bookbinding, etc.* ...	1930	20.3	6.6	6.7	1.0	103.2	110.9
	1924	26.8	6.7	5.5	—	69.3	74.8
Printing and Publication of Newspapers, etc. ...	1930	8.4	3.0	1.2	—	100.8	102.0
	1924	8.7	4.4	1.8	—	56.0	57.8
Manufactured Stationery*	1930	6.8	3.1	3.4	0.1	12.5	16.0
	1924	4.2	1.4	2.1	—	5.6	7.7
Cardboard Box ...	1930	3.1	1.3	1.2	0.3	15.4	16.9
	1924	2.7	1.0	1.0	—	7.0	8.0
Pens, Pencils, etc.	1930	1.4	0.4	0.2	—	4.5	4.7
	1924	1.3	0.3	0.3	—	3.0	3.3
TOTAL—UNITED KINGDOM	1930	484.4	249.4	325.8	3.2	294.2	623.2
	1924	295.1	97.7	120.6	—	181.3	301.9
England and Wales*	1930	373.5	186.8	251.4	1.3	259.8	512.5
	1924	231.8	66.5	86.8	—	153.1	239.9
Scotland* ...	1930	106.6	61.8	73.9	1.9	32.1	107.9
	1924	58.5	30.4	33.0	—	26.3	59.3
Northern Ireland ...	1930	4.3	0.8	0.5	—	2.3	2.8
	1924	4.8	0.8	0.8	—	1.9	2.7

* See footnote (*) to table on page 423.

Total power in use.—The figures in the following table represent the estimated amount of power actually employed by each of the

Paper, Printing and Stationery Trades in the two years. For the purpose of arriving at the power applied mechanically, the capacity of the prime movers required to drive electric generators has been calculated and deducted from the total capacity of the prime movers; the power applied electrically represents the capacity of electric motors driven by generators at firms' works added to that of motors driven by purchased electricity. As the basis for calculating the amount of the primary power that is converted into electrical energy, 746 kilowatts of electrical energy have been taken as equivalent to 1,000 horse-power of primary power and an average loss of ten per cent. in transmission has been allowed except for steam turbines, in which the loss is negligible. The power capacity recorded as "ordinarily in use" has been taken as the basis of the calculation in all cases.

The horse-power of motors designed to be driven by electricity generated in the same works may be greater than that of the prime movers used (or calculated in this manner to have been necessary) to drive them, since machines required for special processes are frequently equipped with individual motors which will only be in use on those occasions when the need for those processes arises. Further, the capacity measurement which firms were instructed to state was the effective horse-power which their engines could develop and this measurement does not necessarily represent the capacity at which the engines were normally operated. For these reasons, the figures given below should not be taken as providing more than a rough indication of the actual amount of power employed by any trade or of the degree of its electrification.

Power in use in 1930 and 1924

Trade	Power applied mechanically	Power applied electrically	Total power	Per head of average number of operatives employed	
	Th. H.P.	Th. H.P.	Th. H.P.	H.P.	
Paper	1930	113.7	338.9	452.6	9.15
	1924	131.1	124.7	255.8	5.35
Wallpaper	1930	0.7	4.8	5.5	1.11
	1924	1.2	2.7	3.9	1.01
Printing, Bookbinding, etc.* ...	1930	8.2	104.0	112.2	0.77
	1924	13.5	69.1	82.6	0.56
Printing and Publication of Newspapers, etc. ...	1930	2.0	94.3	96.3	1.94
	1924	3.1	54.4	57.5	1.43
Manufactured Stationery* ...	1930	2.0	14.9	16.9	0.53
	1924	1.6	7.0	8.6	0.38
Cardboard Box ...	1930	1.0	14.7	15.7	0.51
	1924	1.0	6.4	7.4	0.35
Pens, Pencils, etc. ...	1930	0.7	4.2	4.9	0.72
	1924	0.6	3.0	3.6	0.56
TOTAL	1930	128.3	575.8	704.1	2.20
	1924	152.1	267.3	419.4	1.45

* See footnote (*) to table on page 423.

This table shows the importance of the power requirements of the Paper Trade and the measure of substitution of electrical for mechanical energy which occurred in that trade between 1930 and 1924. Each trade in this group recorded a larger total power equipment in 1930 than in 1924, but whereas the increase in power applied electrically was general, a substantial decrease in the capacity applied mechanically took place in four cases. If the Paper Trade is excluded, the power used per operative would be reduced to 0.93 horse power in 1930 and 0.67 horse power in 1924, an increase in 1930 of about 39 per cent.

Consumption of fuel

Coal and coke.—At the 1930 Census, all firms were required to state the total quantity of coal and coke used for generating power (i.e., for driving engines), and were also requested to furnish particulars of the amounts used for other purposes on a voluntary basis, as the provisions of the Census of Production Act do not enable the latter to be obtained compulsorily. The following particulars relate only to firms in Great Britain.

Coal and coke used

Note.—The figures in italics below the name of the trade represent respectively (1) the percentage of the total capacity of steam engines in use represented by the firms that furnished separate particulars of coal and coke used for power and (2) the percentage of the total net output represented by the firms that furnished separate particulars of coal and coke used for other purposes.

Trade	For power		For other purposes		Unclassified	
	Coal	Coke	Coal	Coke	Coal	Coke
Paper :— (1) <i>76.0</i> ; (2) <i>71.3</i>	1,207.4	0.2	524.4	1.3	647.6	0.2
Wallpaper :— (1) <i>100.0</i> ; (2) <i>20.3</i>	15.2	*	2.1	0.5	—	—
Printing, Bookbinding, etc. :— (1) <i>99.2</i> ; (2) <i>96.7</i>	20.6	0.5	27.2	20.3	0.9	0.7
Printing and Publica- tion of Newspapers, etc. :— (1) <i>100.0</i> ; (2) <i>100.0</i>	0.8	*	5.5	12.2	—	—
Manufactured Sta- tionery :— (1) <i>100.0</i> ; (2) <i>97.4</i>	12.0	—	11.6	4.7	—	—
Cardboard Box :— (1) <i>100.0</i> ; (2) <i>98.4</i>	4.2	*	10.7	3.3	—	—
Pens, Pencils, etc. :— (1) <i>100.0</i> ; (2) <i>100.0</i>	3.0	*	4.4	1.4	—	—
TOTAL (1) <i>76.8</i> ; (2) <i>93.4</i>	1,263.2	0.7	585.9	43.7	648.5	0.9

* Less than 50 tons.

In the Paper Trade, where heat is required for process purposes as well as for power, a number of firms found difficulty in furnishing particulars of the amount of coal and coke used for power and other purposes separately, and it was necessary to accept inclusive statements showing the total amount used for all purposes. It is accordingly impracticable to make a very close estimate of the total quantity of coal used for power in the paper, printing and stationery group of trades, but it seems probable that the quantity of coal so used amounted to between 1,650,000 tons and 1,700,000 tons.

No particulars of oil, gas or other fuel used were ascertained for the year 1930. At the Census of 1924, a voluntary inquiry was made as to the amounts of coal, coke, heavy and light oils, and gas consumed and reference should be made to the Final Report on that Census for particulars of the partial information supplied by each of the Paper, Printing and Stationery Trades.

Electricity.—Particulars of the quantity of electricity used were required from all firms, electricity produced by their own generating plant being distinguished from that purchased from outside sources. No separate record of the purpose for which the current was used was obtained.

The following table shows for each of the paper, printing and stationery group of trades the total quantities of electricity used in 1930 and relates to Great Britain only :—

Electricity used

Trade	Electricity purchased	Electricity generated		Number of units generated per kilowatt of generators in use
		In same works	In other works owned by the firm	
	B.T.U. (Kw.-hrs.) '000	B.T.U. (Kw.-hrs.) '000	B.T.U. (Kw.-hrs.) '000	B.T.U. per Kw.
Paper	96,636	620,173	4,008	3,845
Wallpaper	1,908	2,188	—	1,307
Printing, Bookbinding, etc. ...	59,884	5,152	713	1,159
Printing and Publication of Newspapers, etc.	46,123	510	—	562
Manufactured Stationery ...	8,315	3,174	63	1,292
Cardboard Box	9,490	1,087	—	1,050
Pens, Pencils, etc.	3,866	106	—	431
TOTAL	226,223	632,390	4,784	3,676

The figures shown for current generated represent only the amounts generated *and used*, and fall short of the total output of current in cases where electricity was sold to outside consumers.