

PUBLIC UTILITY SERVICES AND GOVERNMENT DEPARTMENTS

GENERAL REPORT

The following report summarises in comparable form the principal results of the Censuses of 1930 and 1924 in respect of the productive operations of Public Utility Undertakings and Government Departments. The particulars given 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:—

Public Utility Services and Government Departments (1)	Gross output (selling value of products supplied and value of work done) (2)	Cost of materials used (3)	Net output (excess of Col. (2) over Col. (3)) (4)	Average number of persons employed (5)	Net output per person employed (6)	Power available* (7)
	£'000	£'000	£'000	No.	£	H.P.
Local Authorities	1930 66,354 1924 57,372	29,531 25,769	36,823 31,603	237,894 196,481	155 161	184·2 183·5
Gas Undertakings	1930 64,237 1924 63,737	28,934 34,540	35,303 29,197	113,838 107,806	310 271	242·3 185·5
Electricity Undertakings	1930 64,688 1924 41,482	24,005 16,729	40,683 24,753	78,754 49,788	517 497	10,167·0 5,580·4
Water Undertakings	1930 23,000 1924 19,177	4,533 3,802	18,467 15,375	30,496 29,678	606 518	227·1 178·0
Railway Companies	1930 63,704 1924 71,414	24,221 27,859	39,483 43,555	230,695 250,829	171 174	250·5 377·0
Tramway and Light Railway Companies ...	1930 1,369 1924 1,629	643 733	726 896	5,236 6,187	139 145	5·2 3·3
Canal, Dock and Harbour Companies† ...	1930 928 1924 847	263 259	665 588	4,498 3,944	148 149	19·2 16·8
TOTAL — Public Utility Services	1930 284,280 1924 255,658	112,130 109,691	172,150 145,967	701,411 644,713	245 226	11,095·5 6,524·5

Public Utility Services and Government Departments	Gross output (selling value of products supplied and value of work done)	Cost of materials used	Net output (excess of Col. (2) over Col. (3))	Average number of persons employed	Net output per person employed	Power available*
(1)	(2)	(3)	(4)	(5)	(6)	(7)
	£'000	£'000	£'000	No.	£	H.P.
Admiralty ... { 1930	12,489	5,094	7,395	40,114	184	111.4
... { 1924	13,577	4,953	8,624	47,159	183	99.1
General Post Office ... { 1930	11,858	3,822	8,036	33,764	238	0.6
... { 1924	11,177	3,752	7,425	31,872	233	0.3
War Office ... { 1930	3,320	1,096	2,224	12,290	181	37.9
... { 1924	4,104	1,418	2,686	13,337	201	31.5
Other Government Departments ... { 1930	1,536	321	1,215	5,645	215	18.0
... { 1924	1,211	242	969	4,360	222	11.9
TOTAL — Government Departments ... { 1930	29,203	10,333	18,870	91,813	206	167.9
... { 1924	30,069	10,365	19,704	96,728	204	142.8
TOTAL — UNITED KINGDOM ... { 1930	313,483	122,463	191,020	793,224	241	11,263.4
... { 1924	285,727	120,056	165,671	741,441	223	6,667.3
England and Wales † ... { 1930	285,173	112,170	173,003	720,645	240	10,057.9
... { 1924	257,379	109,195	148,184	663,646	223	5,901.8
Scotland ‡ ... { 1930	25,080	8,975	16,105	62,528	258	1,086.1
... { 1924	24,948	9,564	15,384	66,928	230	686.5
Northern Ireland ... { 1930	3,230	1,318	1,912	10,051	190	119.4
... { 1924	3,400	1,297	2,103	10,867	194	79.0

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

† Excluding Gas, Electricity and Water Undertakings.

‡ Great Britain; the particulars relating to Canal, Dock and Harbour Companies in Northern Ireland are included with those for Local Authorities.

§ Owing to the possible disclosure of information relating to individual undertakings, particulars relating to Canal, Dock and Harbour Companies for Scotland are included with those for England and Wales.

Comparability of results.—Separate returns for 1930 were obtained by the Mines Department in respect of quarries owned by Local Authorities (see page 447), but at the Census of 1924 all particulars relating to the operation of their quarries were included by Local Authorities in their general returns. The number of persons employed at these quarries in 1930 was about 3,800 and if the method adopted for 1924 had been followed for 1930, it would be necessary to increase the aggregate shown for 1930 for Local Authorities in the preceding table to this extent, i.e., by between one and two per cent. The change had no effect on the net output per person employed by Local Authorities.

All particulars relating to Great Britain for both 1930 and 1924 are confined to undertakings employing more than ten persons on the average, but those for Northern Ireland apply to undertakings

employing more than five persons for 1930 and to all undertakings for 1924. This slight difference in scope has no effect, however, on the comparability of the aggregates for the group as a whole.

Deficiencies due to the exclusion of small undertakings in Great Britain.—The number of undertakings reporting that not more than ten persons were employed by them on the average was 1,341 for 1930, the total number of their employees being 9,902; the corresponding figures for 1924 were 2,142 undertakings employing 9,920 persons on the average. Of the aggregate number of employees shown for the two years by all Public Utility Services and Government Departments, the proportion recorded by those employing not more than ten persons was 1.2 per cent. in 1930 and 1.3 per cent. in 1924.

Production

In general, the services included in this group are those carried out by National or Local Government Authorities or by companies operating under statutory powers. The methods of output valuation adopted for private enterprises are not appropriate in this group. In the case of Railway Companies, Tramway and Light Railway Companies, Canal, Dock and Harbour Companies, Local Authorities and Government Departments, the output was valued at cost, i.e., at a sum calculated to cover the cost of labour and materials, with such a proportion of the general establishment charges as was attributable to the service concerned; the element of profit is, therefore, absent from the value both of the gross and of the net output. On the other hand, the gross output value of Gas and Electricity Undertakings represented, for the most part, the selling value of the gas and electricity supplied and included the profits derived from their sale; as regards Water Undertakings, the revenues of which are frequently obtained by the levy of a rate on the annual value of the premises served, the receipts may not bear any necessarily fixed relation to working costs. In determining the output value of Gas, Electricity and Water Undertakings the incidence of the constructional and maintenance work done by their employees is of special importance. The method adopted for the purposes of the Census is fully discussed in the reports on these services, from which it will be seen that the effect was to reduce the value of the net output in relation to other industries producing goods for sale. A similar method of valuation was followed at the Census of 1924, and the figures of net output per head in the two years may be regarded as comparable, subject to the general considerations mentioned in the Introductory Notes.

The most noteworthy feature shown by the output aggregates is the substantial increase (64 per cent.) recorded for 1930 in the value of the net output of Electricity Undertakings. Gas and Water Undertakings also showed important increases in 1930 (about 20 per cent.), and the net output of Local Authorities increased by 16 per cent. The average net output per person employed was greater than in 1924 for Gas, Electricity and Water Undertakings but lower in the remainder of the public utility services. No marked change took place in the gross or net value of the work

done by Government Departments in the aggregate, though appreciable increases were recorded in the totals for the General Post Office and Air Ministry, in particular, and decreases for the Admiralty and War Office.

For Public Utility Services as a whole the increase in the net output per person employed in 1930 was somewhat more than 8 per cent. compared with one of about 10 per cent. in the estimated volume of production per worker; the corresponding figures for Government Departments were 1 per cent. and about 9 per cent.

Volume of production.—The following table shows for each class of undertaking in this group the total value of the output recorded for 1930 and an estimated revaluation of similar output in 1924 in terms of 1930 prices. In all cases where records of quantity exist the estimates for 1924 are based on average receipts per unit of output as shown by the returns for 1930. Where such information is not available, the estimates are based on the movement between the two years of the principal costs of production, that is, on changes in prices of the principal materials used and in the average earnings of the employees. Having regard to the many unknown factors which may affect results estimated by the latter method, no high degree of precision can be claimed for the aggregates in question. The particulars shown relate only to production in Great Britain.

Output of	Total production in Great Britain			1930 as a percentage of 1924
	1930	1924		
	As returned	As returned	At 1930 average values	Per cent.
	£'000	£'000	£'000	
Local Authorities	65,370	56,317	52,000	126
Gas Undertakings	59,594	57,223	54,850	109
Electricity Undertakings	57,197	38,225	30,506	187
Water Undertakings	22,775	18,951	21,000	108
Railway Companies	63,265	70,727	64,172	99
Tramway and Light Railway Undertakings	1,360	1,612	1,580	86
Canal, Dock and Harbour Companies	928	847	800	116
TOTAL—Public Utility Services	270,489	243,902	224,908	120
Admiralty	12,489	13,577	13,120	95
General Post Office... ..	11,708	11,078	10,244	114
War Office	3,320	4,104	3,717	89
Other Government Departments...	1,526	1,207	1,106	138
TOTAL—Government Departments	29,043	29,966	28,187	103
TOTAL—Public Utility Services and Government Departments ...	299,532	273,868	253,095	118

Compared with the recorded increase of about 16 per cent. in the total value of the net output of this group, the estimated increase in the volume of production in 1930 amounted to 18 per cent. On the basis of volume of output per employee, the value for 1930 was £382 and £346 for 1924, an increase of about 10 per cent., compared with one of about 8 per cent. in the net output per person employed.

Periods covered by returns

As explained in Note 1 on page xi, returns were accepted for the calendar year 1930 or for the period of account most closely corresponding thereto, provided that the ending date of that period was not later than 31st March, 1931. In the case of public authorities in Scotland, however, returns were furnished for the financial year ended 15th May, 1931, instead of the corresponding period a year earlier.

The following table shows, for Public Utility Services and Government Departments 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	3	0·1	61	—
May, 1930	—	—	—	—
June, 1930	60	2·1	3,885	0·5
July, 1930	3	0·1	5,366	0·7
August, 1930	1	—	25	—
September, 1930	13	0·5	668	0·1
October, 1930	5	0·2	577	0·1
November, 1930	1	—	14	—
December, 1930	767	26·4	353,480	45·1
January, 1931	1	—	17	—
February, 1931	3	0·1	539	0·1
March, 1931	1,840	63·2	388,133	49·5
May, 1931	213	7·3	30,408	3·9
TOTAL	2,910	100·0	783,173	100·0

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

The mean terminal date of the returns made by all undertakings was about the middle of the third week in February, 1931. This result is due to the fact that the accounting year normally adopted by public authorities in England and Wales is the twelve months ending March 31st and in Scotland the twelve months ending May 15th.

Size of undertakings

In the following table the main particulars recorded at the Census of 1930 for Public Utility Services and Government Departments are grouped according to the average numbers of persons shown in the returns, the particulars covering undertakings in Great Britain only.

Size group (average numbers employed)	Number of returns	Gross output	Cost of materials	Net output	Average number of persons employed	Net output per person employed
	No.	£'000	£'000	£'000	No.	£
11-24 ...	812	7,215	3,062	4,153	13,761	302
25-49 ...	643	11,515	4,628	6,887	22,896	301
50-99 ...	533	16,811	7,039	9,772	37,389	261
100-199 ...	366	24,376	9,474	14,902	51,711	288
200-299 ...	173	21,753	9,615	12,138	42,398	286
300-399 ...	86	13,393	4,851	8,542	29,857	286
400-499 ...	62	12,377	5,207	7,170	27,382	262
500-749 ...	68	18,391	7,417	10,974	41,635	264
750-999 ...	42	15,352	6,311	9,041	36,015	251
1,000-1,499 ...	48	23,859	9,873	13,986	59,043	237
1,500 and over ...	77	145,211	53,668	91,543	421,086	217
TOTAL ...	2,910	310,253	121,145	189,108	783,173	241

The figures of net output per employee vary considerably according to the class of production concerned and the results shown above for individual size groups reflect the inclusion, to a greater or less extent, of undertakings yielding high figures in this respect. Particulars for certain of the Public Utility Services are given below:—

Net output per person employed

Size group (average numbers employed)	Local Authorities	Gas Under- takings	Electricity Under- takings	Water Under- takings	Railway Companies
	£	£	£	£	£
11-24 ...	128	312	426	554	127
25-49 ...	133	316	505	610	178
50-99 ...	137	313	494	629	141
100-199 ...	143	297	494	652	168
200-299 ...	139	294	490	455	
300-399 ...	158	251	558	545	—
400-499 ...	154	249	508		
500-749 ...	167	268	585	686	190
750-999 ...	183	319	560		
1,000-1,499 ...	152	291	426	171	—
1,500 and over ...	165	334	582		
TOTAL ...	156	311	517	608	171

Regional distribution

In the following table the principal aggregates for Public Utility Services and Government Departments, as recorded at the Censuses of 1930 and 1924, are grouped according to the areas in which the services were carried out:—

Area	Number of returns	Gross output	Net output	Average number of persons em- ployed	Net output per person em- ployed
	No.	£'000	£'000	No.	£
1. Greater London ...	{ 1930 297 1924 310	{ 77,261 64,686	{ 47,943 37,703	{ 170,995 140,246	{ 280 269
2. Lancashire, with North Cheshire and the Glossop and New Mills District of Derbyshire	{ 1930 424 1924 388	{ 41,449 38,515	{ 26,218 23,037	{ 105,837 97,571	{ 248 236
3. The West Riding of Yorkshire and the City of York ...	{ 1930 236 1924 260	{ 22,150 22,366	{ 13,834 12,865	{ 58,388 53,659	{ 237 240
4. Northumberland, Dur- ham and the Cleveland District of Yorkshire	{ 1930 137 1924 177	{ 14,391 14,905	{ 8,940 8,168	{ 35,991 37,119	{ 248 220
5. Warwickshire, Worces- tershire and Staffor- shire ...	{ 1930 184 1924 211	{ 21,359 17,538	{ 12,474 10,374	{ 47,582 41,226	{ 262 252
6. The rest of England (except Monmouth- shire)* ...	{ 1930 1,114 1924 1,419	{ 96,936 87,421	{ 56,232 48,768	{ 265,766 257,364	{ 212 189
7. Glamorganshire, Mon- mouthshire and Car- marthenshire ...	{ 1930 146 1924 166	{ 8,948 9,573	{ 5,726 5,777	{ 27,317 28,119	{ 210 205
8. The rest of Wales ...	{ 1930 84 1924 134	{ 2,679 2,375	{ 1,636 1,492	{ 8,769 8,342	{ 187 179
TOTAL—England and Wales* ...	{ 1930 2,622 1924 3,065	{ 285,173 257,379	{ 173,003 148,184	{ 720,645 663,646	{ 240 223
9. Lanarkshire, Renfrew- shire and Dumbarton- shire ...	{ 1930 76 1924 82	{ 12,962 12,346	{ 8,559 7,640	{ 30,193 30,162	{ 283 253
10. The rest of Scotland* ...	{ 1930 212 1924 265	{ 12,118 12,602	{ 7,546 7,744	{ 32,335 36,766	{ 233 211
TOTAL—Scotland* ...	{ 1930 288 1924 347	{ 25,080 24,948	{ 16,105 15,384	{ 62,528 66,928	{ 258 230
TOTAL—Great Britain ...	{ 1930 2,910 1924 3,412	{ 310,253 282,327	{ 189,108 163,568	{ 783,173 730,574	{ 241 224
11. Northern Ireland ...	{ 1930 89 1924 134	{ 3,230 3,400	{ 1,912 2,103	{ 10,051 10,867	{ 190 194
TOTAL—UNITED KINGDOM	{ 1930 2,999 1924 3,546	{ 313,483 285,727	{ 191,020 165,671	{ 793,224 741,441	{ 241 223

* In order to avoid disclosure of information relating to individual services, the particulars relating to Canal, Dock and Harbour Companies for Scotland (Area 10) have been included with those for the rest of England (Area 6).

Employment

The following table shows the average numbers of male and female operatives and administrative, technical and clerical staff in each of the Public Utility Services and Government Departments in the two censal years:—

Average numbers employed in 1930 and 1924

Public Utility Services and Government Departments	Operatives		Administrative, technical and clerical staff		Total	
	Males	Females	Males	Females		
Local Authorities* ...	1930	222,801	1,053	12,710	1,330	237,894
	1924	186,119	392	9,339	631	196,481
Gas Undertakings ...	1930	92,997	1,068	17,467	2,306	113,838
	1924	89,812	847	15,376	1,771	107,806
Electricity Undertakings ...	1930	61,884	438	13,997	2,435	78,754
	1924	40,445	256	7,869	1,218	49,788
Water Undertakings ...	1930	25,334	193	4,513	456	30,496
	1924	24,987	226	4,090	375	29,678
Railway Companies ...	1930	215,639	1,603	11,670	1,783	230,695
	1924	236,272	2,033	11,298	1,226	250,829
Tramway and Light Railway Companies ...	1930	4,653	20	497	66	5,236
	1924	5,657	27	420	83	6,187
Canal, Dock and Harbour Companies* ...	1930	4,128	1	344	25	4,498
	1924	3,755	1	179	9	3,944
TOTAL—Public Utility Services ...	1930	627,436	4,376	61,198	8,401	701,411
	1924	587,047	3,782	48,571	5,313	644,713
Admiralty ...	1930	36,953	390	2,538	233	40,114
	1924	43,871	375	2,770	143	47,159
General Post Office ...	1930	28,015	291	5,073	385	33,764
	1924	26,944	198	4,530	200	31,872
War Office ...	1930	9,651	1,086	1,336	217	12,290
	1924	11,063	1,075	1,000	199	13,337
Other Government Departments ...	1930	4,705	538	337	65	5,645
	1924	3,742	363	218	37	4,360
TOTAL—Government Departments	1930	79,324	2,305	9,284	900	91,813
	1924	85,620	2,011	8,518	579	96,728
TOTAL—UNITED KINGDOM	1930	706,760	6,681	70,482	9,301	793,224
	1924	672,667	5,793	57,089	5,892	741,441
England and Wales*	1930	640,625	6,411	65,361	8,248	720,645
	1924	601,126	5,385	52,015	5,120	663,646
Scotland*	1930	57,061	261	4,275	931	62,528
	1924	61,562	399	4,265	702	66,928
Northern Ireland	1930	9,074	9	846	122	10,051
	1924	9,979	9	809	70	10,867

* See footnotes to table on pages 427-8.

Distribution by status.—Of the aggregate number of employees in the group, 10·1 per cent. in 1930 consisted of administrative,

technical and clerical staff and 8·5 per cent. in 1924. The proportion of the number of operatives to that of administrative, etc., staff varied considerably among the different services, being in 1930 about 5 to 1 among Gas, Electricity and Water Undertakings and about 16 to 1 in Railway Companies and Local Authorities. Among Government Departments the proportion was about 8 to 1. In the group as a whole, the total number of operatives increased between 1924 and 1930 by about 5 per cent. and that of administrative, etc., staff by nearly 27 per cent. While administrative, etc., staff increased in each country, the increase in operatives was confined to England and Wales.

Distribution by sex.—Apart from certain factories maintained by Government Departments (e.g., the Army Clothing Factory) the proportion of females among the operatives was generally less than one per cent. in both 1924 and 1930. The increase in female employees was principally in respect of the administrative, technical and clerical staff, the proportion rising from 9·4 per cent. to 11·7 per cent. In the group as a whole the proportion of females rose from 1·6 to 2·0 per cent.

Distribution by age.—The following table classifies by age the numbers of persons of each class recorded as employed in the weeks ended 18th October, 1930 and 1924:—

Numbers of persons employed in the weeks ended 18th October, 1930 and 1924

Public Utility Services and Government Departments	Operatives				Administrative, technical and clerical staff				
	Males		Females		Males		Females		
	Under 18	Total	Under 18	Total	Under 18	Total	Under 18	Total	
Local Authorities* ...	1930	2,748	223,799	35	1,058	418	12,710	103	1,330
	1924	2,738	184,890	20	382	310	9,339	36	631
Gas Undertakings ...	1930	3,414	93,261	45	1,071	720	17,467	146	2,306
	1924	3,064	91,395	26	842	788	15,376	146	1,771
Electricity Undertakings ...	1930	1,992	64,025	20	453	846	13,997	226	2,435
	1924	1,057	42,338	5	256	458	7,869	90	1,218
Water Undertakings ...	1930	277	25,835	2	197	155	4,513	26	456
	1924	381	24,805	3	224	147	4,090	16	375
Railway Companies ...	1930	6,845	210,027	138	1,560	162	11,670	153	1,783
	1924	8,693	237,522	350	2,047	489	11,298	134	1,226
Tramway and Light Railway Companies ...	1930	259	4,610	2	20	18	497	7	66
	1924	256	5,490	7	29	33	420	6	83
Canal, Dock and Harbour Companies*	1930	102	4,151	—	1	22	344	4	25
	1924	133	3,728	—	1	3	179	—	9
TOTAL—Public Utility Services ...	1930	15,637	625,708	242	4,360	2,341	61,198	665	8,401
	1924	16,322	590,218	411	3,781	2,228	48,571	428	5,313

Public Utility Services and Government Departments	Operatives				Administrative, technical and clerical staff				
	Males		Females		Males		Females		
	Under 18	Total	Under 18	Total	Under 18	Total	Under 18	Total	
Admiralty ...	1930	1,140	37,104	2	392	75	2,538	32	233
	1924	1,185	43,937	2	375	59	2,770	7	143
General Post Office ...	1930	966	27,894	50	289	200	5,073	58	385
	1924	1,083	27,091	45	200	167	4,530	20	200
War Office ...	1930	559	9,544	108	1,094	3	1,336	35	217
	1924	779	11,579	89	1,113	57	1,000	33	199
Other Government Departments ...	1930	60	4,915	61	537	2	337	3	65
	1924	79	3,181	46	367	7	218	2	37
TOTAL—Government Departments	1930	2,725	79,457	221	2,312	280	9,284	128	900
	1924	3,126	85,788	182	2,055	290	8,518	62	579
TOTAL—Public Utility Services and Government Departments ...	1930	18,362	705,165	463	6,672	2,621	70,482	793	9,301
	1924	19,448	676,006	593	5,836	2,518	57,089	490	5,892

* See footnotes to table on pages 427-8.

Employment of persons under 18 years of age showed a slight decline in 1930 in aggregate numbers. In proportion to the total of all employees, young persons formed 2·8 per cent. in 1930 and rather more than 3 per cent. in 1924.

Monthly fluctuations in employment.—In order to ascertain what fluctuations in employment there might be in the course of the census year, particulars were obtained regarding the actual numbers of the operative staff employed in one week in each month. The figures for the various services are shown in the respective reports, and the following table gives the monthly aggregates for the whole group.

Operative staff in Public Utility Services and Government Departments in 1930 and 1924

Middle week in	1930			1924
	Total number	Numbers employed by Services and Departments furnishing returns in respect of the twelve months ending		Total number
		December*	March, 1931*	
(1)	(2)	(3)	(4)	(5)
January ...	717,030	318,716	352,627†	668,533
February ...	722,087	318,850	357,027†	674,483
March ...	722,942	319,244	357,140†	678,138
April ...	699,798	320,754	332,075	673,364
May ...	706,909	320,091	341,477	677,769
June ...	715,904	319,567	348,735	681,142
July ...	715,414	317,002	351,009	680,273
August ...	713,490	314,493	351,777	679,289
September ...	711,791	311,425	353,041	679,137
October ...	711,837	312,097	352,882	681,842
November ...	711,008	310,255	353,906	682,017
December ...	713,080	309,887	356,494	685,534
AVERAGE FOR THE TWELVE MONTHS ...	713,441	316,032	350,683	678,460

* Great Britain only.

† Year 1931.

The figures in columns (2) and (5) 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 twelve months ended March 31st, 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 shows the numbers recorded in returns that related to the calendar year.

The figures shown in column (4) relate to returns for the year ended March 31st, 1931, and include the numbers employed by Local Authorities in England and Wales.

It will be observed that, while the figures in column (3) show an almost continuous downward tendency from April to December, those in column (4) increased month by month from April, 1930, to the end of the following March with the exception of decreases in October and January.

* See Introductory Notes, page xi.

Wages

Separate information regarding the amount of wages paid to employees engaged in the productive operations of the various Public Utility Services and Government Departments is not available from the particulars obtained by the Ministry of Labour at the inquiries undertaken by that Department into wages and hours of labour in 1930 and 1924.

Power

The particulars recorded at the Censuses of 1930 and 1924 in respect of power installed and employed in this group are shown in the following table. In view of the special position of Electricity Undertakings, particulars for these undertakings are shown separately.

Power ordinarily in use and not in use 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 <i>Excluding Electricity Undertakings</i>	Th. H.P.	Th. H.P.	Th. H.P.	Th. H.P.	Per cent.	Per cent.
Reciprocating steam engines	393.7	477.7	107.9	96.2	21.5	16.8
Steam turbines	110.3	190.0	31.0	36.9	22.0	16.3
Internal combustion engines:—						
Gas	55.3	66.9	23.8	20.9	30.1	23.8
Petrol, kerosene, or other light oils	20.5	13.0	3.0	1.0	12.8	7.3
Heavy oils	46.4	19.2	8.8	2.6	15.9	11.7
Water engines	3.5	2.9	0.5	0.2	13.2	6.6
TOTAL	629.7	769.7	175.0	157.8	21.7	17.0
Electricity Undertakings						
Reciprocating steam engines	94.1	279.4	116.4	223.2	55.3	44.4
Steam turbines	8,294.2	4,019.7	1,351.4	957.2	14.0	19.2
Internal combustion engines:—						
Gas	16.1	17.6	5.1	5.1	23.9	22.6
Petrol, kerosene, or other light oils	1.6	0.9	0.8	0.4	32.6	29.8
Heavy oils	102.3	50.9	5.9	6.8	5.5	11.8
Water engines	143.2	9.5	32.8	2.7	18.6	22.2
TOTAL	8,651.5	4,378.0	1,512.4	1,195.4	14.9	21.4
TOTAL—Prime movers	9,281.2	5,147.7	1,687.4	1,353.2	15.4	20.8

Type	Capacity ordinarily in use		Capacity in reserve or idle		Proportion in reserve or idle	
	1930	1924	1930	1924	1930	1924
ELECTRIC GENERATORS <i>Excluding Electricity Undertakings</i>	Th. Kw.	Th. Kw.	Th. Kw.	Th. Kw.	Per cent.	Per cent.
Driven by						
Reciprocating steam engines	22.8	47.7	17.3	26.3	43.1	35.5
Steam turbines	61.4	128.5	12.0	20.9	16.3	14.0
Internal combustion engines:—						
Gas	12.0	17.8	8.2	4.2	40.6	19.0
Petrol, kerosene, or other light oils	0.8	0.4	0.2	0.1	21.1	18.9
Heavy oils	11.4	5.9	0.6	0.1	5.0	1.7
Water engines	0.5	0.4	0.3	—	36.9	—
TOTAL	108.9	200.7	38.6	51.6	26.2	20.5
Electricity Undertakings						
Driven by						
Reciprocating steam engines	66.7	191.3	79.1	150.8	54.3	44.1
Steam turbines	6,067.0	2,917.7	1,007.9	695.9	14.2	19.3
Internal combustion engines:—						
Gas	11.5	10.8	3.0	3.7	20.9	25.3
Petrol, kerosene, or other light oils	1.5	0.7	0.2	0.3	12.7	28.9
Heavy oils	69.0	34.4	4.1	4.5	5.5	11.6
Water engines	100.0	6.5	23.5	1.5	19.0	18.7
TOTAL	6,315.7	3,161.4	1,117.8	856.7	15.0	21.3
TOTAL—						
Electric generators	6,424.6	3,362.1	1,156.4	908.3	15.3	21.3
ELECTRIC MOTORS <i>Excluding Electricity Undertakings</i>	Th. H.P.	Th. H.P.	Th. H.P.	Th. H.P.		
Driven by						
Electricity generated in same works	120.4	164.5	25.6	22.7	17.5	12.2
Electricity generated in other works under same ownership	57.6	88.5	3.5	5.9	5.7	6.3
Purchased electricity	254.9	135.4	36.8	24.0	12.6	15.0
TOTAL	432.9	388.4	65.9	52.6	13.2	11.9

Type	Capacity ordinarily in use		Capacity in reserve or idle		Proportion in reserve or idle	
	1930	1924	1930	1924	1930	1924
<i>Electricity Undertakings</i>	Th. H.P.	Th. H.P.	Th. H.P.	Th. H.P.	Per cent.	Per cent.
Driven by Electricity generated in same works	439.9	229.5	81.3	38.8	15.6	14.5
Purchased electricity	2.8	5.8	0.3	1.2	9.8	16.9
TOTAL	442.7	235.3	81.6	40.0	15.6	14.5
TOTAL—Electric motors ...	875.6	623.7	147.5	92.6	14.4	12.9

The power generated by prime movers is required partly for direct application and partly for driving generators for the production of electrical energy. Particulars of the power applied mechanically (i.e. directly) and electrically are given in the table on page 443.

Excluding electricity undertakings, the total capacity of prime movers in use declined by 18 per cent. compared with 1924. There was also a substantial falling off in the employment of plant for the generation of electricity in favour of purchased current; the capacity of motors driven by purchased electricity increased by about 88 per cent.

The Census schedule for 1930 contained an instruction to the effect that obsolete engines should not be recorded, 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 activity, 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 services included in the group in respect of prime movers, electric generators and electric motors installed, are shown in the following table:—

Power available in 1930 and 1924

Public Utility Services and Government Departments	Prime movers	Electric generators	Electric motors			
			Driven by electricity			All electric motors
			Generated in same works	Generated in other works under same ownership	Purchased	
	Th. H.P.	Th. Kw.	Th. H.P.	Th. H.P.	Th. H.P.	Th. H.P.
Local Authorities*	{ 1930 140.4 1924 143.3	{ 2.2 3.4	{ 1.8 9.6	{ — —	{ 43.8 40.2	{ 45.6 49.8
Gas Undertakings	{ 1930 214.6 1924 168.3	{ 47.0 24.7	{ 63.6 38.6	{ — —	{ 27.7 17.2	{ 91.3 55.8
Water Undertakings	{ 1930 185.4 1924 159.7	{ 6.6 2.6	{ 5.8 4.4	{ — —	{ 41.7 18.3	{ 47.5 22.7
Railway Companies	{ 1930 97.4 1924 324.4	{ 9.9 164.9	{ 18.8 85.1	{ — —	{ 153.1 52.6	{ 171.9 137.7
Tramway and Light Railway Companies ...	{ 1930 0.1 1924 0.1	{ — ‡	{ — —	{ — —	{ 5.1 3.2	{ 5.1 3.2
Canal, Dock and Harbour Companies* ...	{ 1930 16.1 1924 7.4	{ 0.2 0.6	{ 0.3 0.1	{ — —	{ 3.1 9.4	{ 3.4 9.5
TOTAL—Public Utility Services, except Electricity Undertakings ...	{ 1930 654.0 1924 803.2	{ 65.9 196.2	{ 90.3 137.8	{ — —	{ 274.5 140.9	{ 364.8 278.7
Admiralty	{ 1930 109.2 1924 94.8	{ 54.2 36.2	{ 10.5 9.0	{ 59.9 94.3	{ 2.2 4.3	{ 72.6 107.6
General Post Office	{ 1930 — 1924 —	{ — —	{ — —	{ — —	{ 0.6 0.3	{ 0.6 0.3
War Office	{ 1930 30.4 1924 20.2	{ 20.6 14.1	{ 35.6 32.3	{ 1.2 0.1	{ 7.5 11.3	{ 44.3 43.7
Other Government Departments ...	{ 1930 11.1 1924 9.3	{ 6.8 5.8	{ 9.6 8.1	{ — —	{ 6.9 2.6	{ 16.5 10.7
TOTAL—Government Departments ...	{ 1930 150.7 1924 124.3	{ 81.6 56.1	{ 55.7 49.4	{ 61.1 94.4	{ 17.2 18.5	{ 134.0 162.3
Electricity Undertakings	{ 1930 10,163.9 1924 5,573.4	{ 7,433.5 4,018.1	{ 521.2 268.3	{ — —	{ 3.1 7.0	{ 524.3 275.3

Public Utility Services and Government Departments	Prime movers	Electric generators	Electric motors			All electric motors
			Driven by electricity		Generated in other works under same ownership	
			Generated in same works	Purchased		
TOTAL—UNITED KINGDOM:—	Th. H.P.	Th. Kw.	Th. H.P.	Th. H.P.	Th. H.P.	Th. H.P.
Excluding Electricity Undertakings ...	1930 804.7 1924 927.5	147.5 252.3	146.0 187.2	61.1 94.4	291.7 159.4	498.8 441.0
Including Electricity Undertakings ...	1930 10,968.6 1924 6,500.9	7,581.0 4,270.4	667.2 455.5	61.1 94.4	294.8 166.4	1,023.1 716.3
England and Wales* ...	1930 9,795.8 1924 5,764.5	6,770.0 3,780.5	623.6 415.0	60.8 74.9	262.1 137.3	946.5 627.2
Scotland* ...	1930 1,054.6 1924 658.2	735.9 444.1	39.3 36.2	0.3 19.5	31.5 28.3	71.1 84.0
Northern Ireland	1930 118.2 1924 78.2	75.1 45.8	4.3 4.3	— —	1.2 0.8	5.5 5.1

* See footnotes to table on pages 427-8.

‡ Less than 50 kw.

Total power in use.—The figures in the following table represent the estimated amount of power actually employed in the two years, except at Electricity Undertakings. 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 the 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 10 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 specified was the effective horse-power 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.

Power in use in 1930 and 1924

Public Utility Services and Government Departments (other than Electricity Undertakings)	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.
Local Authorities* ...	1930 126.4 1924 135.2	41.1 45.2	167.5 180.4	0.75 0.97
Gas Undertakings ...	1930 100.8 1924 98.8	73.7 46.9	174.5 145.7	1.86 1.61
Water Undertakings ...	1930 128.1 1924 115.7	31.7 13.5	159.8 129.2	6.26 5.12
Railway Companies ...	1930 73.9 1924 93.4	163.6 129.8	237.5 223.2	1.09 0.94
Tramway and Light Railway Companies ...	1930 0.1 1924 0.1	3.8 2.9	3.9 3.0	0.83 0.54
Canal, Dock and Harbour Companies* ...	1930 13.5 1924 4.7	3.1 9.5	16.6 14.2	4.04 3.78
TOTAL—Public Utility Services ...	1930 442.8 1924 447.9	317.0 247.8	759.8 695.7	1.33 1.26
Admiralty ...	1930 32.1 1924 41.3	67.0 99.8	99.1 141.1	2.65 3.19
General Post Office ...	1930 — 1924 —	0.5 0.3	0.5 0.3	0.02 0.01
War Office ...	1930 0.8 1924 ‡	32.0 30.5	32.8 30.5	3.05 2.52
Other Government Departments ...	1930 0.9 1924 0.8	16.4 10.0	17.3 10.8	3.30 2.62
TOTAL—Government Departments ...	1930 33.8 1924 42.1	115.9 140.6	149.7 182.7	1.83 2.08
TOTAL—PUBLIC UTILITY SERVICES AND GOVERNMENT DEPARTMENTS ...	1930 476.6 1924 490.0	432.9 388.4	909.5 878.4	1.40 1.38

* See footnotes to table on pages 427-8

‡ Less than 50 h.p.

Comparison between the aggregates for the two years is affected by the exclusion for 1930 of electricity supply stations owned by certain railway companies (see page 532). If allowance is made for this factor, the amount of power in use per operative employed in

1930 would be increased to 1.23 horse power for Railway Companies, and for the group as a whole to 1.44 horse power, an increase of about 4 per cent, compared with 1924. The amount of power in use per operative employed by Local Authorities and by the Admiralty declined in 1930.

Consumption of fuel

Coal and coke.—At the 1930 Census, all public utility undertakings 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 table summarises the information received, the particulars relating only to undertakings in Great Britain.

Coal and coke used

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

Public Utility Services and Government Departments	For power		For other purposes		Unclassified	
	Coal	Coke	Coal	Coke	Coal	Coke
	Th. tons	Th. tons	Th. tons	Th. tons	Th. tons	Th. tons
Local Authorities— (1) 100.0; (2) * ...	205.5	11.1	*	*	—	—
Gas Undertakings— (1) 100.0; (2) 100.0	83.4	1,009.2	17,767.9	3,483.0	—	—
Electricity Undertakings— (1) 100.0; (2) 60.5	9,194.3	254.9	108.7	8.3	—	—
Water Undertakings— (1) 100.0; (2) 86.2 ...	501.9	18.5	19.9	6.3	—	—
Railway Companies— (1) 100.0; (2) 100.0	208.5	3.9	323.8	111.3	—	—
Tramway and Light Railway Companies— (1) —; (2) * ...	—	—	*	*	—	—
Canal, Dock and Harbour Companies— (1) 100.0; (2) * ...	21.2	0.9	*	*	—	—
TOTAL—Public Utility Services— (1) 100.0; (2) 67.2 ...	10,214.8	1,298.5	18,220.3	3,608.9	—	—

* Particulars of coal and coke used for purposes other than power were not asked for.

Public Utility Services and Government Departments	For power		For other purposes		Unclassified	
	Coal	Coke	Coal	Coke	Coal	Coke
	Th. tons	Th. tons	Th. tons	Th. tons	Th. tons.	Th. tons
Admiralty— (1) 100.0; (2) 100.0	128.6	0.1	30.0	10.6	—	—
General Post Office— (1) —; (2) 100.0 ...	—	—	1.2	0.2	—	—
War Office— (1) 43.0; (2) 21.4 ...	13.3	0.6	0.9	1.9	93.1	10.4
Other Government Departments— (1) 100.0; (2) 100.0	2.6	1.1	1.5	5.7	—	—
TOTAL — Government Departments— (1) 91.3; (2) 90.7 ...	144.5	1.8	33.6	18.4	93.1	10.4
TOTAL — PUBLIC UTILITY SERVICES AND GOVERNMENT DEPARTMENTS— (1) 99.9; (2) 69.5 ...	10,359.3	1,300.3	18,253.9	3,627.3	93.1	10.4

The total quantities of coal and coke used for power (driving engines) by all public utility undertakings and Government Departments in 1930 were approximately 10,370,000 tons and 1,300,000 tons respectively; of the total consumption of coal, the amount used by Electricity Undertakings was about 9,200,000 tons. It should be noted that the particulars shown for Railway Companies are exclusive of coal used for transport purposes, amounting in 1930 to 12,875,000 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 for that year.

Electricity.—Particulars of the quantity of electricity used for productive purposes were required from all Public Utility Services and Government Departments, electricity produced by their own generating plant being distinguished from that purchased from outside sources. No separate record of the purposes for which the current was used was obtained.

The following table, which relates to Great Britain only, shows for each of the Public Utility Services and Government Departments the total quantities of electricity used in 1930. The table does not

include electricity undertakings, since the electric generators installed at these establishments were used almost entirely for the production of electricity for public supply and cannot, therefore, be related to the quantity of electricity used for productive purposes only.

Electricity used

Public Utility Services and Government Departments (other than Electricity Undertakings)	Electricity purchased	Electricity generated	Number of units generated per kilowatt of generators in use
	B.T.U. (Kw.-hrs.) '000	B.T.U. (Kw.-hrs.) '000	B.T.U. per Kw.
Local Authorities	21,214	1,388	876
Gas Undertakings	16,354	48,183	1,675
Water Undertakings	49,924	6,380	1,456
Railway Companies	99,434	10,404	1,317
Tramway and Light Railway Companies	3,506	—	—
Canal, Dock and Harbour Companies ...	786	200	995
TOTAL—Public Utility Services ...	191,218	66,555	1,554
Admiralty	1,238	47,368	1,052
General Post Office	652	—	—
War Office	2,107	13,643	987
Other Government Departments ...	2,332	1,320	195
TOTAL—Government Departments ...	6,329	62,331	950
TOTAL—PUBLIC UTILITY SERVICES AND GOVERNMENT DEPARTMENTS...	197,547	128,886	1,192

The total quantity of electricity used in connection with the productive operations of electricity undertakings in 1930 was recorded as 733,581,000 units, of which 20,491,000 units were purchased.