

# THE CHEMICAL AND ALLIED TRADES.

## GENERAL REPORT.

Contents.	Page
INTRODUCTORY .. .. .	1
Principal results for 1924 .. .. .	2
Comparability of results with those for 1912 and 1907 .. .. .	3
PRODUCTION .. .. .	4
Net output per head in 1924 and 1907 .. .. .	4
EMPLOYMENT .. .. .	5
Employment in 1924 .. .. .	5
Classification of persons employed in a specified week .. .. .	5
Monthly fluctuations in employment .. .. .	6
Employment in 1924 and 1907 .. .. .	7
Classification of average numbers employed .. .. .	8
Sex and age distribution of operatives .. .. .	8
Administrative, technical and clerical staff .. .. .	9
WAGES IN 1924 .. .. .	9
MECHANICAL POWER .. .. .	10
Power equipment of the various trades in 1924, 1912 and 1907 .. .. .	10
Classification of power equipment of the Chemical and Allied group .. .. .	12
Power equipment in use and not in use in 1924 .. .. .	13
Power available for mechanical and electrical application in 1924 .. .. .	13
FUEL AND ELECTRICITY IN 1924 .. .. .	15
Fuel consumption .. .. .	15
Production and consumption of electricity .. .. .	18

### Introductory.

The following general report deals with the trades engaged in the manufacture of chemicals and kindred products (including dyes, fertilisers, coke, oils, soap, candles, perfumery, glue, starch, blue, polishes, colours, explosives, matches, inks, etc. The production of such goods in Government factories or by railway companies, etc., will be dealt with in the reports on Public Utility Services, which are to form part of a separate volume.

Measured by the numbers engaged in the various trades, the largest member of this group is the Chemicals, Dyestuffs and Drugs Trade, which accounted in 1924 for 69,245 persons employed, or 33·4 per cent. of the group total of 207,121 persons. The next largest are the Soap, Candle and Perfumery Trades, the Paints, Colours and Varnish Trades, and the Coke and By-products Trade, with 30,064, 19,822 and 18,739 persons employed, or 14·5, 9·6 and 9·0 per cent. respectively of the group total.

Each of the trades included in the group forms the subject of a separate report, in which the detailed results of the 1924 Census of Production are set out, and such comparisons as are possible with the results of the Censuses for 1912 and 1907 are made. The object of the present general report is to bring together the principal results for the whole group of trades, and, in addition, to set out certain particulars (e.g. as to fuel consumption) which are more conveniently dealt with here than in the separate trade reports.

*Principal results for 1924.*

The number of separate returns received from firms engaged in the Chemical and Allied Trades group in 1924 was 3,444. About 360 firms to which schedules were sent did not furnish returns, but the great majority of these firms had very small establishments, and they included a number which were no longer carrying on business at the end of the censal year. On the basis of the information available, it is estimated that they did not employ more than about 1,550 persons in all and that their aggregate net output was probably not in excess of £450,000. These figures represent an omission of, at most, about 0.75 per cent. and 0.6 per cent. respectively of the total figures for the group; and the absence of returns from the firms in question does not materially affect the uses made of the figures in this general report.

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

*Chemical and Allied Trades.**Output in 1924.\**

Trade.	Gross output (selling value of goods made and value of work done). (1)	Cost of materials used and amount paid to other firms for work given out. (2)	Net output (excess of col. (1) over col. (2) ]. (3)	Persons employed (except outworkers). (4)	Net output per person employed, as shown in col. (4). (5)
	£'000	£'000	£'000	Number	£
Chemicals, Dyestuffs and Drugs .. .. .	56,204	30,779	25,425	69,245	367
Coke and By-products .. .. .	24,539	19,481	5,058	18,739	270
Seed Crushing .. .. .	36,422	32,512	3,910	14,027	279
Oil and Tallow .. .. .	27,745	21,443	6,302	14,550	433
Fertiliser, Glue, Sheep Dip, etc. .. .. .	8,347	5,358	2,989	10,766	277
Soap, Candle and Perfumery .. .. .	32,798	20,215	12,583	30,064	418
Starch, Blue and Polishes .. .. .	9,914	4,723	5,191	12,446	417
Paints, Colours and Varnish .. .. .	17,950	9,872	8,078	19,822	408
Explosives and Fireworks .. .. .	5,328	2,514	2,814	8,636	326
Match .. .. .	4,454	943	3,511	5,222	672
Ink, Gum and Sealing Wax .. .. .	3,146	1,441	1,705	3,604	473
<b>TOTAL FOR UNITED KINGDOM</b>	<b>226,847</b>	<b>149,281</b>	<b>77,566</b>	<b>207,121</b>	<b>375</b>
England and Wales .. .. .	206,848	134,917	71,931	189,905	379
Scotland† .. .. .	19,371	13,951	5,420	16,221	334
Northern Ireland .. .. .	628	413	215	995	216

\* Not including the output of, nor the persons employed by, railway companies, Government departments, etc.; particulars relating to these establishments are given in the reports on Public Utility Services, which form part of a separate volume. The value of the chemical and similar products made by such establishments is stated in the individual trade reports concerned (see pages 78, 93, 132 and 144 of this volume).

† In order to avoid the possible disclosure of information relating to individual firms, particulars relating to the Explosives and Fireworks Trade and the Match Trade in Scotland have been combined with those for England and Wales.

*Comparability of results with those for 1912 and 1907.*

The scope of the Census was not quite the same in the three censal years, and the comparability of the totals for 1924 with those for other years is affected by the changes referred to in the following paragraphs:—

(1) The Censuses of 1907 and 1924 extended to all firms, however small, but in 1912, firms employing not more than five persons (excluding proprietors) were required to state only the average number of persons employed by them in the year. The exemption of the small firms in 1912 resulted in the exclusion of a substantial proportion of some of the Chemical and Allied Trades and, both for that reason and because the war interrupted the task of dealing with incomplete and incorrect returns, the information available for that year, for the group as a whole, is not sufficiently complete to warrant its use for detailed comparisons. For this reason the 1907 figures only are, in general, taken for comparison with those for 1924 in the trade reports and, except in respect of power equipment, in this general report.

(2) The Census of 1907 covered Great Britain and the whole of Ireland, but that of 1924 applied only to Great Britain and Northern Ireland. According to the Census of Production carried out by the Government of the Irish Free State in respect of the year 1926, the Chemical and Allied Trades carried on in that country employed about 1,500 persons and had a gross output of about £1,081,000, that is to say, about 0.7 per cent. of the total number of persons employed and about 0.5 per cent. of the gross output, as returned for this group of trades in the United Kingdom in 1924.

(3) In any comparison of figures representing money values, the changes in the level of prices which occurred in the period between the first and third Censuses should be kept in mind.

The comparability of the results of the three Censuses for a few individual trades is affected by changes which have been made in the allocation of certain products to different trades. These changes are explained in the reports on the trades concerned. The principal examples are: (i) The combination in 1924 of by-product recovery plant at blast furnaces with coke ovens operated at collieries to form the Coke and By-products Trade; in 1912 and 1907 particulars relating to by-product recovery plant at blast furnaces were included in general returns covering all operations at blast furnaces and steel works\*; (ii) the transfer in 1924 of firms whose main business was the manufacture of perfumed spirits, perfumery and

\* See the volume containing the report on the Iron and Steel Trades, etc. (page 26).

toilet preparations from the Chemicals, Dyestuffs and Drugs Trades (in which trades such production was mainly recorded in 1912 and 1907) to the Soap, Candle and Perfumery Trades.\*

### Production.

It is difficult to find a satisfactory basis on which to compare production in the several trades in the same year, or in any trade or trades in different years. Obviously, no comparisons between trades could be based on the aggregate quantities of goods produced owing to their varied character, even if the necessary information were available for this purpose. The gross output values recorded in the Census of Production are affected in varying degrees by the duplication of goods or processes which they involve, and hence they do not form a practicable basis for comparisons. Some of the difficulties can be avoided by basing comparisons on net output, which, being arrived at by deducting, from the value of the gross output, the total cost of materials used and the amount paid to other firms for work given out to them, represents completely and without duplication the value added to the materials in the course of manufacture. The net output thus constitutes for any industry the fund from which wages, salaries, rent, royalties, rates, taxes, depreciation, advertisement and sales expenses, and all other similar charges have to be provided, as well as profits; and if the net output for any trade is divided by the number of persons employed by firms in that trade, the resulting figure of net output per head furnishes a basis of comparison between the positions of different trades in the same year (or the same trade in different years) which takes account of differences in the numbers of persons employed and the continuity of their work. The use of net output per head as a basis of comparison was discussed at length in the Final Report on the First Census of Production (1907), where it was pointed out that "as the net output is the fund out of which all charges on industry, except the cost of materials as delivered at the works, are met, it will naturally vary with the amount of those charges" (page 12 of Cd. 6320). The conclusion reached was that "the average net output per head gives a somewhat fictitious representation of the condition of a trade" and that it constitutes only a rough measure on which to base comparisons (pages 14, 15). Hence, while it remains true that the net output for a trade represents a fact, i.e. the value added to materials by capital and labour, and constitutes the best available basis for the comparisons in view, the qualifications to which its use for this purpose is subject must be kept in mind.

*Net output per head in 1924 and 1907.*—The following table shows, for each of the trades included in the Chemical and Allied group, the net output per head of persons employed in 1924 and 1907.

\* See pages 104 to 120.

### Net output per head of persons employed.\*

Trade.	1924.	1907.
Chemicals, Dyestuffs and Drugs .. .. .	£ 367	£ 183
Coke and By-products .. .. .	270	273
Seed Crushing .. .. .	279	180
Oil and Tallow .. .. .	433	204
Fertiliser, Glue, Sheep Dip, etc. .. .. .	277	154
Soap, Candle and Perfumery .. .. .	418	155
Starch, Blue and Polishes .. .. .	417	174
Paints, Colours and Varnish .. .. .	408	198
Explosives and Fireworks .. .. .	326	118
Match .. .. .	672	96
Ink, Gum and Sealing Wax .. .. .	473	280
ALL TRADES .. .. .	375	179

\* It has been ascertained from the Census records that the exclusion of particulars relating to Southern Ireland from the 1907 figures would not materially affect the results shown.

The average net output per person employed in the Chemical and Allied group increased from £179 in 1907 to £375 in 1924, or by 109 per cent. The greatest changes, relative to the group average, occurred in the Match Trade, the Coke and By-products Trade, the Ink, Gum and Sealing Wax Trades, and the Seed Crushing Trade. In the first mentioned the net output per head increased from 46 per cent. below the group average in 1907 to 81 per cent. above the average in 1924, this increase being largely due to the inclusion in the net output for the later year of the Excise duty imposed on matches after the war; in the second the net output per person employed fell from 52 per cent. above the group average in 1907 to 27 per cent. below the group average in 1924†; in the third there was a decrease from 56 per cent. above the average in 1907 to 27 per cent. above the average in 1924 and, in the fourth a decrease from 1 per cent. above the average in 1907 to 25 per cent. below the average in 1924. Of the remaining trades, the net output per head in each year in the Chemicals, Dyestuffs and Drugs Trades, the Oil and Tallow Trades and the Paints, Colours and Varnish Trades differed little in relation to the group average.

Excluding the Match Trade, the net output per person employed was highest in the Ink, Gum and Sealing Wax Trades in both years and was lowest in the Explosives and Fireworks Trades in 1907 and in the Coke and By-products Trade in 1924.

### Employment.

#### Employment in 1924.

*Classification of persons employed in a specified week.*—The following table classifies by sex, age and character of employment the numbers of persons who were recorded as employed in the various Chemical and Allied Trades in the week ended 18th October, 1924.

† See, however, the paragraph on page 3 dealing with the comparability of the figures for this trade in 1924 and 1907.

## Number of persons employed in the week ended 18th October, 1924.

Trade.	Operative staff.				Administrative, technical and clerical staff.			
	Males.		Females.		Males.		Females.	
	Under 18.	Total.	Under 18.	Total.	Under 18.	Total.	Under 18.	Total.
	In thousands.				No.			
Chemicals, Dyestuffs and Drugs .. ..	2.8	47.7	2.6	9.5	548	8,699	403	3,292
Coke and By-products .. ..	0.4	17.6	*	*	61	1,058	2	38
Seed Crushing .. ..	0.2	11.7	0.1	0.3	92	1,506	26	460
Oil and Tallow .. ..	0.6	10.8	0.1	0.4	203	2,732	81	642
Fertiliser, Glue, Sheep Dip, etc. .. ..	0.4	7.5	0.3	1.4	92	1,464	44	390
Soap, Candle and Perfumery .. ..	1.6	12.4	3.3	10.0	367	5,198	326	2,469
Starch, Blue and Polishes .. ..	0.3	4.5	1.2	5.6	50	1,704	88	679
Paints, Colours and Varnish .. ..	0.9	11.6	0.5	1.9	276	4,743	162	1,556
Explosives and Fireworks .. ..	0.5	3.6	1.3	4.1	33	653	24	302
Match .. ..	0.1	1.7	0.4	3.1	8	348	4	121
Ink, Gum and Sealing Wax .. ..	0.3	1.7	0.2	0.8	42	776	53	346
TOTAL .. ..	8.1	130.8	10.0	37.1	1,772	28,881	1,213	10,295

\* Less than 50.

The number of female operatives exceeded the number of male operatives in the Match Trade, the Explosives and Fireworks Trades and the Starch, Blue and Polishes Trades; the proportion of female operatives employed was also high in the Soap, Candle and Perfumery Trades, the Ink, Gum and Sealing Wax Trades and the Chemicals, Dyestuffs and Drugs Trades.

*Monthly fluctuations in employment.*—In order to ascertain what fluctuations in employment there might be in the course of the censal year, firms were also required to state the actual numbers of the operative staff employed in one week in each month. The figures for each trade are shown in the respective reports, and the following table gives the monthly aggregates for all the trades together:—

## Operative staff in the Chemical and Allied Trades in 1924.

Week ended	Males.	Females.	Total.
12th January .. ..	129,776	36,570	166,346
16th February .. ..	130,886	36,494	167,380
15th March .. ..	132,570	36,967	169,537
12th April .. ..	133,711	37,216	170,927
17th May .. ..	132,540	37,140	169,680
21st June .. ..	130,563	37,170	167,733
19th July .. ..	130,066	36,684	166,750
16th August .. ..	129,834	36,805	166,639
13th September .. ..	130,191	37,172	167,363
18th October .. ..	129,939	37,665	167,604
15th November .. ..	129,882	37,697	167,579
13th December .. ..	130,097	37,704	167,801
AVERAGE FOR THE 12 MONTHS .. ..	130,838	37,107	167,945

The total number of operatives employed was highest in April, when it was 2,982, or nearly 1.8 per cent., above the average for the 12 months, and lowest in January, when it was 1,599, or nearly 1.0 per cent., below the average; the figure for the end of the year was 1,455 in excess of that for the beginning.

The highest number of male operatives was recorded for April (2,873 above the average for the year) and the lowest for January (1,062 below the average). With regard to female operatives, the greatest number was recorded as employed in December (597 above the average) and the lowest number in February (613 below the average).

The average numbers employed during the year in the group as a whole were divided between males and females in the proportion of 779 to 221 and the proportion of males fell from 781 per thousand in the first half-year to 777 per thousand in the second half-year.

## Employment in 1924 and 1907.

The following table shows the average numbers of male and female operatives (wage earners), and administrative, technical and clerical staff (salaried persons), in each of the Chemical and Allied Trades in the censal years 1924 and 1907. The average numbers shown in this table and the table on page 8 have been determined in the manner explained in Note (19) on page xii.

## Average numbers employed in 1924 and 1907 in the several Chemical and Allied Trades.

Trade.	Operatives (wage earners).		Administrative, technical and clerical staff (salaried persons).		Total.
	Males.	Females.	Males.	Females.	
Chemicals, Dyestuffs and Drugs .. ..	47,741	9,513	8,699	3,292	69,245
.. ..	40,118	5,922	5,572	645	52,257
.. ..	17,618	25	1,058	38	18,739
Coke and By-products .. ..	10,570	61	325	2	10,958
.. ..	11,726	335	1,506	460	14,027
.. ..	6,753	52	859	32	7,696
Seed Crushing .. ..	10,819	357	2,732	642	14,550
.. ..	7,558	85	1,536	99	9,278
Fertiliser, Glue, Sheep Dip, etc. .. ..	7,475	1,437	1,464	390	10,766
.. ..	9,811	991	1,551	91	12,444
.. ..	12,404	9,993	5,198	2,469	30,064
Soap, Candle and Perfumery .. ..	11,390	4,206	2,825	297	18,718
.. ..	4,477	5,586	1,704	679	12,446
.. ..	5,159	5,031	1,417	188	11,795
Starch, Blue and Polishes .. ..	11,589	1,934	4,743	1,556	19,822
.. ..	9,602	972	2,992	274	13,840
Paints, Colours and Varnish .. ..	3,611	4,070	653	302	8,636
.. ..	6,462	5,363	758	161	12,744
Explosives and Fireworks .. ..	1,698	3,055	348	121	5,222
.. ..	920	2,945	322	69	4,256
Match .. ..	1,680	802	776	346	3,604
.. ..	967	234	408	46	1,655
Ink, Gum and Sealing Wax .. ..	130,838	37,107	28,881	10,295	176,121
.. ..	109,310	25,862	18,565	1,904	155,641
ALL TRADES .. ..	167,945	37,107	39,176	10,295	207,121
.. ..	135,172	25,862	20,469	1,904	155,641
TOTALS .. ..	167,945	37,107	39,176	10,295	207,121
.. ..	135,172	25,862	20,469	1,904	155,641

The greatest relative increase in numbers employed in 1924 as compared with 1907 is shown in the Ink, Gum and Sealing Wax Trade, where the numbers increased from 1,655 in 1907 to 3,604 in 1924, or by 118 per cent. Notable increases also took place in the Seed Crushing Trade (82 per cent.), the Soap, Candle and Perfumery Trades (61 per cent.), and the Oil and Tallow Trades (57 per cent.). The figures for the Coke and By-products Trade are not comparable (see page 3).

Decreases in the numbers employed occurred in the Explosives and Fireworks Trades (32 per cent.) and the Fertiliser, Glue, Sheep Dip, etc., Trades (13·5 per cent.).

For the group as a whole, the numbers employed in 1924 exceeded the numbers employed in 1907 by 33 per cent., an important part of which is due to changes in trade grouping.

*Classification of average numbers employed.*—The following table shows the distribution, according to sex, age and character of employment, of the average number of persons employed in the Chemical and Allied group of trades in 1924 and 1907:—

*Average numbers employed in all Chemical and Allied Trades in the two censal years.*

Sex and age.	1924.		1907.	
	Operative staff.	Total staff.	Wage earners.	Total staff.
<i>Males:—</i>				
Under 18 .. .. .	8,055	9,827	8,943	10,777
Over 18 .. .. .	122,783	149,892	100,367	117,098
TOTAL .. .. .	130,838	159,719	109,310	127,875
<i>Females:—</i>				
Under 18 .. .. .	10,055	11,268	7,381	7,640
Over 18 .. .. .	27,052	36,134	18,481	20,126
TOTAL .. .. .	37,107	47,402	25,862	27,766
<i>Males and females:—</i>				
Under 18 .. .. .	18,110	21,095	16,324	18,417
Over 18 .. .. .	149,835	186,026	118,848	137,224
TOTAL .. .. .	167,945	207,121	135,172	155,641

*Sex and age distribution of operatives.*—Labour in the Chemical and Allied Trades in each of the censal years was predominantly male; in the group as a whole male operatives formed, in 1924, 78 per cent. of the total operative staff and 82 per cent. of the adult operatives, but only 44 per cent. of the operatives under 18.

The total number of operatives employed in the group in 1924 was greater by 24 per cent. than in 1907; the number of male operatives employed in 1924 was 20 per cent. in excess of the number employed in 1907, though there was a decrease of nearly 10 per cent. in the number of males under 18. The number of female operatives increased by 43 per cent. between the two years.

The proportion of operatives under 18 differed little in the two censal years, being 12 per cent. of the total operative staff in 1907 and 11 per cent. in 1924.

*Administrative, technical and clerical staff.*—The increase in the administrative, technical and clerical staff in 1924 over the salaried persons employed in 1907 was 18,707, or 91 per cent. Of this increase males accounted for 10,316 and females for 8,391.

The increase in males, entirely confined to adults, probably signified an increase in management and sales staffs; the increase in females, mainly confined to adults, probably related largely to clerical staff, reflecting a widespread adoption of more detailed accounting methods, and to clerical labour associated with selling organisation.

The proportion of females in the administrative staff in 1924 was 26 per cent. as compared with 10 per cent. in 1907.

For the group as a whole, the proportion of administrative, technical and clerical staff to the total staff was 19 per cent. in 1924 and 13 per cent. in 1907.

### Wages in 1924.

The following table summarises the information contained in the reports on the separate trades as to the amount of wages paid by firms in those trades in 1924. The particulars of wages shown in column (5) of the table are those ascertained by the Ministry of Labour as a result of the voluntary enquiry undertaken by that Department into wages and hours of labour in the United Kingdom in 1924. The numbers of operatives shown in column (1) are those returned to the Census of Production as employed by the firms concerned in the week ended 18th October, 1924. The proportion of each trade represented by the firms that furnished particulars of their wage-bills is shown in columns (2) and (4) on the bases of numbers of operatives employed and of net output, respectively.

Trade.	Firms furnishing returns of wages.					
	Operatives employed.		Net output.		Wages paid.	
	Number.	Proportion of trade total.	Amount.	Proportion of trade total.	Amount.	Proportion of net output.
	(1)	(2)	(3)	(4)	(5)	(6)
		Per cent.	£'000.	Per cent.	£'000.	Per cent.
Chemicals, Dyestuffs and Drugs .. .. .	37,773	66	15,425	61	5,402	35·0
Coke and By-products ..	4,970	29	2,005	40	867	43·2
Seed Crushing .. .. .	11,726	98	3,826	98	1,728	45·2
Oil and Tallow .. .. .	6,887	60	3,728	59	1,112	29·8
Fertiliser, Glue, Sheep Dip, etc. .. .. .	3,963	47	1,520	51	548	36·1
Soap, Candle and Perfumery .. .. .	15,882	70	9,292	74	1,953	21·0
Starch, Blue and Polishes	5,375	54	3,018	58	579	19·2
Paints, Colours and Varnish .. .. .	6,868	51	3,982	49	942	23·6
Explosives and Fireworks	6,200	76	2,322	83	627	27·0
Match .. .. .	4,203	89	3,411	97	474	13·9
Ink, Gum and Sealing Wax .. .. .	1,522	60	1,151	67	211	18·3
TOTAL .. .. .	105,369	63	49,680	65	14,443	29·1

**Mechanical Power.\***

The power equipment of factories consists in the first instance of the prime movers installed in the works, part being used to apply power mechanically and part to actuate generators for the production of electrical energy. Only a portion of that electrical energy is used for power, i.e., to drive electric motors, the remainder being used for lighting, heating and for manufacturing processes. In addition, many factories derive part or all of their power from electricity purchased and used for driving electric motors.

*Power equipment of the various Chemical and Allied Trades in 1924, 1912 and 1907.*—The particulars furnished at the three Censuses regarding prime movers and electric generators in factories in the Chemical and Allied group of trades are shown in the following table. Particulars of electric motors were not obtained in 1907, and particulars relating to 1924 and 1912 only can be given.

The summary figures of power equipment secured at the 1912 Census are included in this and the following paragraphs, though they are omitted from most of the individual trade reports. The exclusion in that year of firms employing not more than five persons and the incompleteness of many of the returns rendered the results secured for the most part ineffective for purposes of comparison. The figures relating to power equipment are, however, likely to have been affected in a less degree than other aggregates by the omission of the small enterprises. The main interest of the figures given for 1912 lies in the indication which they afford of the increase that has occurred since that year in the use of electricity, particularly purchased electricity, as a source of power. The omission of small firms in 1912 may have had a particular importance in reference to this feature.

In connexion with the omission of the Irish Free State from the 1924 Census (see page 3) it may be mentioned that, according to the Census of Production conducted by the Free State Government in respect of the year 1926, the total capacity of prime movers in the Chemical and Allied Trades in that year was 2,680 horse-power, which is about 0.6 per cent. of the total recorded for the United Kingdom in 1924; and the capacity of the electric motors driven by purchased electricity was 730 horse-power, or 0.4 per cent. of the United Kingdom figure for 1924. The effect on comparisons with earlier Censuses of the absence of the Irish Free State from the 1924 Census may, therefore, be considered as negligible in this group of trades.

\* The particulars given in this section for individual trades may not in all cases represent accurately the equipment available for the processes of that trade alone. The operations of some firms in this group extend to more than one trade (e.g. the manufacture of coke and the recovery of by-products are frequently carried on in association with blast furnaces, steel smelting works and rolling mills) and the power requirements for all the processes involved were often derived from a central power unit, which could not be apportioned between the various trades. This qualification also affects the tables given in the section dealing with fuel and electricity (pages 15 to 20).

*Power equipment of the several Chemical and Allied Trades.*

Trade.	✓ Prime movers.			Electric generators.		
	1924.	1912.	1907.	1924.	1912.	1907.
	Thousand H.P.			Thousand Kw.		
Chemicals, Dyestuffs and Drugs .. .. .	168.7	117.4	110.7	70.4	26.7	19.2
Coke and By-products ..	64.0	40.3	28.6	24.4	14.3	2.0
Seed Crushing .. ..	50.5	35.9	26.5	15.0	6.1	1.1
Oil and Tallow .. ..	49.5	23.7	18.0	25.1	7.2	2.6
Fertiliser, Glue, Sheep Dip, etc. .. .. .	17.6	23.8	21.9	3.8	1.6	0.9
Soap, Candle and Perfumery .. .. .	24.9	15.4	17.0	9.0	4.1	3.8
Starch, Blue and Polishes	7.0	5.9	9.3	3.0	0.9	1.0
Paints, Colours and Varnish .. .. .	15.0	14.7	14.6	3.0	0.8	0.5
Explosives and Fireworks	13.7	14.7	15.5	6.7	4.5	2.8
Match .. .. .	5.5	3.1	1.6	2.4	0.6	0.1
Ink, Gum and Sealing Wax .. .. .	2.1	1.6	2.1	0.3	*	*
TOTAL .. .. .	418.5	296.5	265.8	163.1	66.8	34.0

\* Less than 50 Kw.

Trade.	Electric motors driven by electricity generated in same works.		✓ Electric motors driven by purchased electricity.		All electric motors.	
	1924.	1912.	1924.	1912.	1924.	1912.
	Thousand H.P.		Thousand H.P.		Thousand H.P.	
Chemicals, Dyestuffs and Drugs .. .. .	52.0	11.0	68.0	16.7	120.0	27.7
Coke and By-products ..	16.0	17.1	32.2	5.5	48.2	22.6
Seed Crushing .. ..	18.0	2.0	23.0	3.0	41.0	5.0
Oil and Tallow .. ..	22.0	2.5	9.5	0.8	31.5	3.3
Fertiliser, Glue, Sheep Dip, etc. .. .. .	4.4	1.2	20.5	4.0	24.9	5.2
Soap, Candle and Perfumery .. .. .	8.2	5.5	10.3	1.8	18.5	7.3
Starch, Blue and Polishes	5.3	0.7	7.4	2.4	12.7	3.1
Paints, Colours and Varnish .. .. .	2.8	0.7	24.8	7.5	27.6	8.2
Explosives and Fireworks	10.6	4.3	1.3	0.6	11.9	4.9
Match .. .. .	2.6	0.3	0.6	0.1	3.2	0.4
Ink, Gum and Sealing Wax .. .. .	0.2	0.1	4.4	1.2	4.6	1.3
TOTAL .. .. .	142.1	45.4	202.0	43.6	344.1	89.0

The distribution of the power equipment recorded in 1924 among the three geographical areas covered by the Census was as follows :—

Area.	Prime movers.	Electric generators.	Electric motors driven by	
			Electricity generated in same works.	Purchased electricity.
England and Wales .. ..	Th.H.P. 369.8	Th.Kw. 143.2	Th.H.P. 126.9	Th.H.P. 183.0
Scotland* .. ..	47.0	18.9	13.9	18.8
Northern Ireland .. ..	1.7	1.0	1.3	0.2
TOTAL .. ..	418.5	163.1	142.1	202.0

\* See footnote (†) to table on page 2.

*Classification of power equipment of the Chemical and Allied group—*  
The next table, which relates to the power equipment of all the trades taken together, classifies the prime movers according to kinds, the electric generators according to the description of prime movers by which they were driven, and the electric motors according as they were actuated by purchased electricity or by electricity generated in the same factory or works.

Power equipment.	1924.*	1912.	1907.
<b>PRIME MOVERS :—</b>	Th.H.P.	Th.H.P.	Th.H.P.
Reciprocating steam engines .. ..	242.8	217.8	228.2
Steam turbines .. ..	94.6	16.7	0.7
Gas and oil engines .. ..	78.6	56.2	30.5
Water power .. ..	2.3	5.7	4.6
Other power .. ..	0.2	0.1	1.8
TOTAL .. ..	418.5	296.5	265.8
<b>ELECTRIC GENERATORS :—</b>	Th.Kw.	Th.Kw.	Th.Kw.
Driven by—			
Reciprocating steam engines .. ..	60.0	35.0	24.8
Steam turbines .. ..	67.9	9.6	} 9.2
Gas and oil engines .. ..	35.1	} 22.2	
Water power .. ..	0.1		
Other power .. ..	*		
TOTAL .. ..	163.1	66.8	34.0
<b>ELECTRIC MOTORS :—</b>	Th.H.P.	Th.H.P.	Th.H.P.
Driven by—			
Electricity generated in same works .. ..	142.1	45.4	} (Not ascertained)†
Purchased electricity .. ..	202.0	43.6	
TOTAL .. ..	344.1	89.0	..

\* Less than 50 Kw.

† The total amount of electrical energy recorded as purchased for all purposes in 1907 was 41,985,000 Board of Trade units (kilowatt-hours) and the quantity generated by the dynamos operated by the firms in this group of trades may be estimated at about 106,250,000 Board of Trade units.

*Power equipment in use and not in use in 1924.*—The firms that made returns to the Census for 1924 were required to distinguish between the prime movers, electric generators, and electric motors ordinarily in use in the course of the year and those that were in reserve or idle. The proportions not in use should not be taken as a direct measure of the inactivity of trade during the year. While some of the engines, generators, and motors were not in use on account of lack of orders for goods, some were idle because they were normally in reserve against a breakdown or sudden rush of trade and others may have been in various stages of obsolescence, awaiting the time for being dismantled. The particulars recorded as to power ordinarily in use and not in use in 1924 are given in the following table :—

*Power ordinarily in use and not in use in the Chemical and Allied Trades in 1924.*

Trade.	Prime movers.		Electric generators.		Electric motors.	
	(a) Ordinarily in use ; (b) not in use.	Percentage not in use.*	(a) Ordinarily in use ; (b) not in use.	Percentage not in use.*	(a) Ordinarily in use ; (b) not in use.	Percentage not in use.*
	Th.H.P.		Th.Kw.		Th.H.P.	
Chemicals, Dye-stuffs and Drugs (a) 102.5	} 39.2	}	32.7	} 53.5	91.5	} 23.7
(b) 66.2			37.6		28.5	
Coke and By-products (a) 46.5	} 27.3	}	15.5	} 36.6	38.4	} 20.3
(b) 17.5			8.9		9.8	
Seed Crushing (a) 36.4	} 28.0	}	6.2	} 58.4	32.0	} 21.9
(b) 14.1			8.8		9.0	
Oil and Tallow (a) 33.0	} 33.4	}	14.1	} 43.9	19.2	} 39.0
(b) 16.5			11.0		12.3	
Fertiliser, Glue, Sheep Dip, etc. (a) 13.7	} 21.9	}	2.9	} 24.1	22.7	} 8.9
(b) 3.9			0.9		2.2	
Soap, Candle and Perfumery (a) 19.9	} 20.1	}	4.3	} 52.0	16.5	} 10.8
(b) 5.0			4.7		2.0	
Starch, Blue and Polishes.. (a) 6.3	} 10.6	}	2.6	} 12.2	10.7	} 15.5
(b) 0.7			0.4		2.0	
Paints, Colours and Varnish (a) 11.8	} 21.2	}	1.6	} 47.9	24.5	} 11.3
(b) 3.2			1.5		3.1	
Explosives and Fireworks (a) 9.7	} 29.4	}	4.3	} 34.9	9.5	} 20.2
(b) 4.0			2.3		2.4	
Match .. (a) 3.7	} 33.0	}	1.5	} 37.6	2.6	} 20.0
(b) 1.8			0.9		0.6	
Ink, Gum and Sealing Wax (a) 1.6	} 23.7	}	0.2	} 48.3	4.2	} 9.2
(b) 0.5			0.2		0.4	
TOTAL .. (a) 285.1	} 31.9	}	85.9	} 47.3	271.8	} 21.0
(b) 133.4			77.2		72.3	

\* Based in each case upon the actual figures returned.

*Power available for mechanical and electrical application in 1924.*—In order to ascertain the actual amount of power available in the several trades, and the proportion of that power applied electrically,

the capacity of the prime movers used to actuate electric generators must be replaced by the capacity of the electric motors driven by the electricity so produced. How far it may be legitimate to add together the capacity of engines applying, or intended to apply, power mechanically and the capacity of the electric motors, so as to obtain the power capacity of a factory using both forms of energy, will depend on the organisation of the factory. The information supplied furnishes no guidance as to the effective capacity of the power equipment, for, on the one hand, actual working capacity is not necessarily identical with the indicated horse-power nor with that which an engine was originally built to develop, data which served largely as the basis of returns; and, on the other hand, it cannot be assumed that an engine can run uniformly at its peak load, and some engine-power is generally provided as a reserve against breakdowns and not for regular use. In particular, a series of motors (whose aggregate capacity would be returned to the Census) may be installed to run on successive processes, some of which are carried on intermittently as the materials to be treated become available, so that the series always includes some units not actually in operation. In such cases the aggregate horse-power of the motors, being greater than the power called for at any moment, may be greater than the horse-power of the prime-movers required to actuate the generators from which the series of motors is driven. Since, however, the mechanical power available per operative employed is regarded as significant of the efficiency of an organisation, an attempt has been made to provide such a measure, though the result can only be regarded as a rough indication claiming no high degree of precision.

In calculating this measure, the power allocated for driving electric generators has to be deducted from the total capacity of prime movers; for this purpose, 746 kilowatts of electrical energy are taken as the equivalent of 1,000 horse-power of mechanical energy, and an average loss of 10 per cent. is allowed in the conversion of mechanical into electrical energy, except in the case of steam turbines, which are usually bolted direct to the shafting of the generator. The power available to be applied mechanically is thus ascertained; and the electrical power available is the sum of the capacities of motors driven by purchased electricity and of those driven by electricity generated in the same works. Comparison with power available in 1907 is not possible, since the capacity of electric motors was not ascertained in that year.

The calculation relating to power available has been made on the basis of the power equipment installed and not on that recorded as being in use. For reasons already given, it must be recognised that the figures representing power available per operative employed are, to some extent which cannot be determined from the data available in the Census office, in excess of the average power utilisable.

The following table sets out the result of the calculation:—  
*Power available in the several Chemical and Allied Trades in 1924.*

Trade.	Power for mechanical application.	Power for electrical application.	Total power.	Per head of average number of operatives employed.
	Th.H.P.	Th.H.P.	Th.H.P.	H.P.
Chemicals, Dyestuffs and Drugs ..	68·2	120·0	188·2	3·3
Coke and By-products .. ..	29·1	48·2	77·3	4·4
Seed Crushing .. ..	29·3	41·0	70·3	5·8
Oil and Tallow .. ..	14·1	31·5	45·6	4·1
Fertiliser, Glue, Sheep Dip, etc. ..	11·9	24·9	36·8	4·1
Soap, Candle and Perfumery ..	12·1	18·5	30·6	1·4
Starch, Blue and Polishes .. ..	2·6	12·7	15·3	1·5
Paints, Colours and Varnish ..	10·5	27·6	38·1	2·8
Explosives and Fireworks .. ..	4·5	11·9	16·4	2·1
Match .. ..	2·0	3·2	5·2	1·1
Ink, Gum and Sealing Wax ..	1·6	4·6	6·2	2·5
TOTAL .. ..	185·9	344·1	530·0	3·1

In the aggregate, the power for electrical application was nearly double that for mechanical application.

#### Fuel and Electricity in 1924.\*

All firms that received schedules were asked to furnish voluntarily particulars of their consumption of fuel (of specified kinds) and electricity (distinguishing that purchased from that generated in the works) under two headings, namely (i) for power (driving engines), and (ii) for heating or lighting the premises, transport and all other purposes, including manufacturing processes. Firms whose aggregate net output was 70·5 per cent. of the net output of all firms in the Chemical and Allied Trades in 1924 furnished information in response to this request, though, as will appear later, many of them were unable to divide their particulars into the two categories indicated. Moreover, the information returned was not equally representative of fuel consumption, of production of electricity, and of consumption of purchased electricity, as the data supplied under these three headings respectively covered 69·5 per cent. of the capacity of all the prime movers (not hydraulic) in use in the Chemical and Allied group of trades, 65·8 per cent. of the capacity of the electric generators, and 75·8 per cent. of that of the electric motors driven by purchased electricity. The proportion of the trade for which particulars were furnished also varied considerably between one trade and another, as will be seen from the tables given below.

#### Fuel consumption.

In 1907, when firms were only asked to state their consumption of coal and coke without specification of purpose, the firms that furnished particulars had 71·9 per cent. of the net output of the group as a whole, and they recorded a consumption of 3,267,500† tons of coal and 201,000 tons of coke. The consumption recorded

\* See footnote on page 10.

† Includes 32,000 tons of coal and coke not separately recorded.



in 1924 by firms representing 70.5 per cent. of the net output of the group, included 19,648,500 tons of coal and 329,600 tons of coke, or, excluding the Coke and By-products Trade, in which the reported consumption of coal included that used for conversion into coke, 2,849,200 tons of coal.

Apart from the Coke and By-products Trade, the greatest consumers of coal and coke were the Chemicals, Dyestuffs and Drugs Trades. The Oil and Tallow Trade was the greatest user of heavy oils and the Chemicals, Dyestuffs and Drugs Trades of light oils and gas.

The following table summarises the information which was received from firms regarding the quantities of different kinds of fuel which they consumed in 1924. These quantities are divided into (a) the amounts used for power purposes, i.e., driving engines; and (b) the amounts used for the lighting or heating of premises, transport and all other purposes, so far as the particulars furnished enable the classification to be made. It appears from the returns, however, that the basis of classification adopted by the various firms which furnished information was by no means uniform; and, apart from this, considerable quantities were reported for which no particulars of purpose could be assigned. These quantities are shown under heading (c) in the table.

*Consumption of fuel (so far as reported) in the several Chemical and Allied Trades in 1924.*

(NOTES:—1. The figures in italics below the name of the trade represent respectively (1) the percentage of the total net output of the trade represented by the firms giving information, and (2) the percentage of the total capacity of prime movers (not hydraulic) in use in the trade represented by the firms giving information.

2. The fuel consumed is, in each case, classified according to the purpose for which it was used, as follows: (a) for power (driving engines), (b) for heating and lighting premises, transport and manufacturing processes, (c) for purposes not separately distinguished).

Trade.		Coal and slack.	Coke and breeze.	Heavy oils.	Light oils.	Gas† purchased.
		Th.tons.	Th.tons.	Th.galls.	Th.galls.	Th. therms.
Chemicals, Dyestuffs and Drugs.	(a)	426.9	42.5	117.9	10.0	171.8
	(b)	454.3	103.3	833.5	558.8	862.6
	(c)	561.0	31.6	35.9	34.6	461.6
<i>(1) 71.7; (2) 59.5.</i>						
Coke and By-products	(a)	81.7	9.5	—	3.4	—
	(b)	16,603.3‡	95.9	56.1	5.0	152.6
	(c)	114.3	—	—	—	—
<i>(1) 84.9; (2) 84.7.</i>						
Seed Crushing	(a)	159.1	0.6	§	0.5	2.3
	(b)	38.9	3.1	99.7	284.9	162.9
	(c)	78.0	0.4	—	0.8	—
<i>(1) 94.3; (2) 74.6.</i>						
Oil and Tallow	(a)	196.6	0.3	1,702.1	0.4	24.6
	(b)	284.5	6.5	3,181.3	146.0	92.5
	(c)	141.8	4.7	4,428.2	5.9	12.2
<i>(1) 61.5; (2) 86.9.</i>						
Fertiliser, Glue, Sheep Dip, etc.	(a)	41.8	0.8	23.8	24.1	41.2
	(b)	29.2	4.2	6.6	87.3	81.1
	(c)	49.6	1.7	3.1	2.6	5.9
<i>(1) 70.1; (2) 63.9.</i>						
Soap, Candle and Perfumery.	(a)	17.1	0.7	§	0.5	21.8
	(b)	111.3	3.6	338.2	82.9	148.2
	(c)	71.2	3.1	10.0	—	140.4
<i>(1) 49.4; (2) 29.9.</i>						

† The amount of gas purchased was, in some cases, returned in terms of cubic feet; in such cases 200 cubic feet have been taken as equivalent to 1 therm.

‡ Including coal used in coke-making.

§ Less than 50 gallons.

*Consumption of fuel in 1924—continued.*

Trade.		Coal and slack.	Coke and breeze.	Heavy oils.	Light oils.	Gas* purchased.
		Th.tons.	Th.tons.	Th.galls.	Th.galls.	Th. therms.
Starch, Blue and Polishes	(a)	11.2	0.3	—	3.3	23.6
	(b)	3.0	1.2	216.8	53.8	98.1
	(c)	14.8	0.9	—	—	2.7
<i>(1) 52.9; (2) 73.8.</i>						
Paints, Colours and Varnish.	(a)	28.1	2.6	661.7	8.9	208.9
	(b)	28.2	7.3	21.5	131.1	387.1
	(c)	5.6	—	—	13.5	43.1
<i>(1) 72.0; (2) 75.0.</i>						
Explosives and Fireworks	(a)	23.0	0.2	22.3	6.5	26.9
	(b)	47.8	2.1	9.5	47.3	50.9
	(c)	9.0	0.1	—	3.2	1.0
<i>(1) 96.7; (2) 98.1.</i>						
Match	(a)	3.2	0.9	182.5	0.8	16.8
	(b)	7.5	0.1	109.2	42.3	19.0
	(c)	—	—	—	—	12.4
<i>(1) 95.3; (2) 88.5.</i>						
Ink, Gum and Sealing Wax	(a)	3.7	0.4	0.1	—	58.3
	(b)	1.7	1.0	37.4	13.8	77.1
	(c)	1.1	—	—	—	29.3
<i>(1) 73.1; (2) 89.1.</i>						
ALL TRADES	(a)	992.4	58.8	2,710.4	58.4	596.2
	(b)	17,609.7	228.3	4,909.8	1,453.2	2,132.1
	(c)	1,046.4	42.5	4,477.2	60.6	708.6
<i>(1) 70.5; (2) 69.5.</i>						
GRAND TOTAL (ALL PURPOSES)		19,648.5	329.6	12,097.4	1,572.2	3,436.9

\* The amount of gas purchased was, in some cases, returned in terms of cubic feet; in such cases 200 cubic feet have been taken as equivalent to 1 therm.

In some of the Chemical and Allied Trades fuel is used for manufacturing purposes other than the production of power. Quantities of fuel so consumed were intended as a general rule to be included under heading (b), i.e., for lighting or heating premises, transport, etc., and have been included under that heading in the preceding table. In the following trades where such special consumption of fuel is of particular importance, information was invited as to the quantities used for special trade purposes. The particulars recorded, which relate to the same firms that supplied the information given in the preceding table, were as follows:—

*Special consumption of fuel (so far as returned).*

Trade.	Coal and slack.	Coke and breeze.	Heavy oils.	Light oils.	Gas† purchased.
	Th. tons.	Th. tons.	Th. galls.	Th. galls.	Th. therms.
Chemicals, Dyestuffs and Drugs (at retorts, stills, etc.)	398.0	89.5	823.5	0.1	310.9
Coke and By-products (at coke ovens)	16,588.4	95.5	—	—	40.3
Oil and Tallow (at stills, etc.)	272.3	6.0	3,099.2	1.2	8.1
Soap, Candle and Perfumery (at soap boilers)	107.1	2.8	338.0	—	20.3
Starch, Blue and Polishes (at ovens)	2.1	0.8	1.0	—	49.0
Ink, Gum and Sealing Wax (for manufacturing purposes)	1.1	0.7	37.4	3.8	46.1

† See footnote to preceding table.

The above figures are exclusive of the quantities of any such fuel recorded under the heading "for purposes not separately distinguished."

The difficulty of drawing conclusions and making generalisations on the basis of the figures shown in the table on pages 16 and 17 is due primarily to the large percentages of fuel consumed for which no particulars of purpose could be specified by the firms that furnished information. The following table shows these percentages for some of the trades in the group and for the group as a whole.

*Proportion of fuel consumption for purposes not defined.*

Trade.	Coal and slack.	Coke and breeze.	Heavy oils.	Light oils.	Gas* purchased.
	Percent.	Percent.	Percent.	Percent.	Percent.
Chemicals, Dyestuffs and Drugs ..	38.9	17.8	3.6	5.7	30.9
Seed Crushing .. .. .	28.3	10.1	—	0.3	—
Oil and Tallow .. .. .	22.8	40.6	47.6	3.9	9.5
Fertiliser, Glue, Sheep Dip, etc. ..	41.1	25.8	9.1	2.3	4.6
Soap, Candle and Perfumery ..	35.7	41.9	2.9	—	45.2
Starch, Blue and Polishes .. .. .	50.8	36.3	—	—	2.1
ALL TRADES .. .. .	5.3	12.9	37.0	3.9	20.6

\* See footnote to table on pages 16 and 17.

Where the quantities of fuel consumed for purposes not distinguished form only small percentages of the total quantities reported, it may involve no great error to distribute them, e.g., in the proportions recorded for the purposes for which consumption was specified; but where the undistributed portion is large in proportion to the total consumption such a process might lead to erroneous conclusions. In these circumstances it is not practicable to estimate with any degree of confidence the quantities of the different kinds of fuel used for power, and for other purposes, by the firms that replied to the question in the Census schedules on the subject. Any attempt to extend the particulars furnished so as to estimate the quantities of different kinds of fuel used by all the firms in each of the Chemical and Allied Trades would encounter other difficulties, even if distinction of purpose be ignored and attention be confined to the fuel used for all purposes combined. The table on pages 16 and 17 shows that the firms that furnished information represented varying proportions of the several trades. Even where the proportion was over 75 per cent., any assumption that the firms that did not furnish information distributed their consumption among the different kinds of fuel in the proportions represented by the practice of those firms that supplied particulars would be extremely hazardous.

For the foregoing reasons, therefore, the information given in the table referred to should not be used as being of more than face value without extreme caution.

*Production and consumption of electricity.*

For 1907 the Census returns showed that about 100,972,000 units of electricity were generated in establishments with dynamos of 32,260 kilowatt capacity, equivalent to 95 per cent. of the total

capacity of 34,000 kilowatts in the Chemical and Allied Trades as a whole. In 1924, firms with generators (in use) of 56,400 kilowatts capacity (65.8 per cent. of the group total) recorded an aggregate of 177,255,000 units of electricity generated and consumed in their works. As regards purchased electricity, a return was obtained from all firms at the 1907 Census, and this showed a total of nearly 42,000,000 units purchased for all purposes. In 1924 the information received showed that about 222,600,000 units were purchased by firms owning 75.8 per cent. of the electric motors (in use) driven by purchased electricity. While the figures form an inadequate basis for general estimates covering the entire group at both dates, they show clearly that a very large increase in the use of electrical energy took place in these trades, and appear also to be in harmony with the conclusion indicated on page 10 as to the increased tendency to rely on electricity purchased from public supply undertakings rather than on the installation of generating plant in the works themselves.

The table on page 20 summarises the detailed information received from firms in the Chemical and Allied group of trades as to the generation and consumption of electricity in 1924. The figures must, however, be regarded as subject to qualifications similar to those which apply to the particulars given on pages 15 to 18 respecting consumption of fuel; and for the same reasons they cannot be appropriately used as the basis of generalised deductions. The percentages of the reported consumption of electricity for which no particulars of purpose could be given were as follows in some of the more important trades in the group and in the group as a whole:—

*Proportion of consumption of electricity for purposes not defined.*

Trade.	Electricity.	
	Purchased.	Generated in own works.
	Per cent.	Per cent.
Chemicals, Dyestuffs and Drugs .. .. .	23.4	71.1
Coke and By-products .. .. .	17.5	13.7
Seed Crushing .. .. .	71.4	75.9
Oil and Tallow .. .. .	23.9	16.0
Fertiliser, Glue, Sheep Dip, etc. .. .. .	35.8	1.5
Soap, Candle and Perfumery .. .. .	13.2	48.3
Starch, Blue and Polishes .. .. .	45.5	—
ALL TRADES .. .. .	26.7	54.6

The particulars representing the average amount of electricity generated per kilowatt capacity, as shown in column (3) of the following table, exhibit a wide range of variation. These variations doubtless correspond to some extent with differences in the continuity with which the electric generators were operated in the works of the firms which furnished information. The difficulty of basing general conclusions regarding the several trades as a whole on the

data shown in the table applies not less to this particular aspect of the matter than to the others.

*Consumption of electricity (so far as reported) in the several Chemical and Allied Trades.*

(NOTES.—1. The figures in italics below the name of the trade represent respectively (1) the percentage of the total capacity of electric generators in use in the trade represented by the firms which stated the quantity of electricity generated in their works; and (2) the percentage of the total capacity of electric motors, driven by purchased electricity, in use in the trade represented by the firms which stated the quantity of electricity purchased by them.

2. The electricity generated and the electricity purchased are, in each case, classified according to the purpose for which they were used, as follows:—(a) for power (driving engines), (b) for heating and lighting premises, transport and manufacturing processes, (c) for purposes not separately distinguished).

Trade.	Electricity generated in works of firms giving information.				Electricity purchased by firms giving information.	
	Capacity of electric generators (in use). (1)	Quantity of electricity generated. (2)	Average per kilowatt capacity of generators. (3)	Capacity of electric motors (in use) driven thereby. (4)	Quantity of electricity purchased. (5)	Capacity of electric motors (in use) driven thereby. (6)
	Th.Kw.	Million B.T. units.	B.T. units.	Th.H.P.	Million B.T. units.	Th.H.P.
Chemicals, Dyestuffs and Drugs. (1) 66.8; (2) 82.0.	21.8	(a) 29.8 (b) 1.9 (c) 77.8	5,013.3	26.3	(a) 58.5 (b) 40.9 (c) 30.5	45.5
Coke and By-products (1) 47.4; (2) 83.2.	7.3	(a) 13.2 (b) 1.6 (c) 2.3	2,328.8	10.3	(a) 34.8 (b) 1.4 (c) 7.7	21.7
Seed Crushing (1) 84.4; (2) 85.4.	5.3	(a) 3.5 (b) 0.6 (c) 12.8	3,200.0	12.7	(a) 5.9 (b) 0.2 (c) 15.4	13.1
Oil and Tallow (1) 75.3; (2) 51.5.	10.6	(a) 10.7 (b) 0.8 (c) 2.2	1,297.4	9.3	(a) 1.1 (b) 0.3 (c) 0.4	3.3
Fertiliser, Glue, Sheep Dip, etc. (1) 40.2; (2) 72.5.	1.1	(a) 1.5 (b) 0.1 (c) †	1,412.2	2.2	(a) 4.4 (b) 0.3 (c) 2.6	13.5
Soap, Candle and Perfumery. (1) 26.4; (2) 84.2.	1.1	(a) 0.7 (b) 0.7 (c) 1.4	2,472.0	3.0	(a) 4.2 (b) 0.8 (c) 0.8	8.1
Starch, Blue and Polishes. (1) 97.5; (2) 27.7.	2.6	(a) 4.3 (b) 0.2 (c) —	1,756.1	4.1	(a) 0.4 (b) 0.1 (c) 0.4	1.8
Paints, Colours and Varnish. (1) 67.5; (2) 68.4.	1.1	(a) 1.7 (b) 0.1 (c) †	1,727.3	1.3	(a) 6.5 (b) 0.5 (c) 1.1	15.6
Explosives and Fireworks. (1) 93.2; (2) 89.2.	4.0	(a) 6.7 (b) 0.1 (c) 0.1	1,717.5	8.5	(a) 0.8 (b) 0.1 (c) 0.1	0.9
Match (1) 87.6; (2) 57.3.	1.3	(a) 1.9 (b) 0.4 (c) —	1,726.2	2.1	(a) 0.1 (b) 0.1 (c) 0.1	0.3
Ink, Gum and Sealing Wax. (1) 98.2; (2) 58.3.	0.2	(a) — (b) † (c) 0.1	767.8	*	(a) 1.7 (b) 0.1 (c) 0.3	2.4
TOTAL (1) 65.8; (2) 75.8.	56.4	(a) 74.0 (b) 6.5 (c) 96.7	3,140.3	79.8	(a) 118.4 (b) 44.8 (c) 59.4	146.2
		177.2			222.6	

\* Less than 50 H.P.

† Less than 50,000 B.T. Units.