

## THE COTTON TRADES.

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## THE COTTON TRADES.

## Introductory.\*

Firms whose main or sole business was the spinning of cotton yarns or the manufacture of fabrics and other goods of cotton were, at the Census enquiries of 1907 and 1912, required to furnish particulars relating to their production on schedules of identical form. For the purposes of the third Census, two forms of enquiry were used for the Cotton Trades, the spinning and doubling of yarn being dealt with separately from the working-up of the yarn into other goods. Firms engaged both in spinning and in manufacturing were required to furnish separate particulars for these departments of their business, whether the yarns spun by them were used in their own establishments or were sold for use elsewhere. Moreover, in the Census of 1924, but not in those of 1907 and 1912, manufacturers of hosiery who spun cotton yarns were required to furnish separate Returns relating to their cotton spinning departments on schedules for the Cotton Spinning Trade.

In the following Report, the Cotton Spinning Trade and the Cotton Weaving Trade are first considered separately, with such comparisons between production in 1924 and in the two earlier censal years as are practicable. Fuller comparisons between the results of the three Censuses are made in the section which then follows, where the Cotton Spinning and Weaving Trades are treated as a combined whole; in this section the qualifications applying to comparisons between the results for 1924 and those for the two previous censal years are fully explained (pp. 48-9).

## COTTON SPINNING.

*Number of Returns.*—The number of separate Returns included in the aggregates for the Cotton Spinning Trade for 1924 was 1,148. Thirteen firms to which schedules were sent did not furnish Returns, but the omission due to this cause is not of importance since, on the basis of the information available it is estimated that they did not employ more than 250 persons and that their net output probably lay between £40,000 and £50,000.

## Production.†

*Total make of single yarn.*—The following table states the quantities of cotton yarn, in the single stage, spun in the years 1924, 1912 and

\* See also the Notes on pp. vi-xiv. † See Tables II A and II B, pp. 64-5.

1907, as shown in the Returns for 1924 and 1912 and estimated from the particulars available for 1907.

Single cotton yarn.	Returned on schedules for the Cotton Spinning Trade,	Returned on schedules for other trades.	Total yarn spun.
<i>Counts spun in 1924 :—</i>	Th. lb.	Th. lb.	Th. lb.
Up to No. 40 .. .. .	1,020,645	1,340	1,021,985
Over No. 40 to No. 80 .. .. .	313,709	1	313,710
Over No. 80 to No. 120 .. .. .	55,874	—	55,874
Over No. 120 .. .. .	3,623	—	3,623
<b>TOTAL—1924 .. .. .</b>	<b>1,393,851</b>	<b>1,341</b>	<b>1,395,192</b>
<b>TOTAL—1912 .. .. .</b>	<b>1,979,042</b>	<b>3,733</b>	<b>1,982,775</b>
<b>TOTAL—1907 .. .. .</b>	(not specified.)	2,185	1,800,000 (approximate)

No particulars relating to the proportions of the different counts spun in 1912 or 1907 are available. The table shows that the weight of the single yarn produced in 1924 was about 30 per cent. less than that of the production of 1912 and about 22½ per cent. below the estimated production of 1907.

A precise statement of the value of the total yarn produced, taken as single yarn, cannot be made. The particulars of value required from firms related to the value of goods in the form in which they were delivered. Thus, where yarns were both spun and doubled by the same firm, the value of the single yarn was not shown separately, the sum returned being the value of the doubled yarn, and including, in some cases, the value of yarns purchased for doubling. As indicated above, firms that carried on spinning and weaving in the same establishment were required to show the value of all yarns spun, even if used for weaving purposes in that establishment. In that case, firms were instructed to show the value at which the yarns were booked to the weaving department, and there was no necessarily uniform standard for such valuations, the values given being dependent on the systems of costing followed by the individual firms. Calculating the values of the yarns made on the basis of the average value returned for each range of counts by firms making returns of single yarns disposed of, and adding the charges for bleaching, dyeing, etc. raw cotton or cotton yarn (cf. p. 192) the total value of all yarns spun in 1924 is estimated at approximately £157,000,000 as compared with a total (estimated on the same basis) of about £88,000,000 in 1907. The average value per lb., calculated at about 1s. for 1907, works out at about 2s. 3d. for 1924.

*Yarns (including doubled yarns) delivered or added to stock.—* In the following statement showing the output of cotton yarns (whether by the Cotton Spinning Trade or by other trades) in the

censal year 1924, the figures relate to the condition in which the yarns were delivered during the year or added to stock at the end of the year.

Counts of yarns.	Total.	
	Quantity.	Value.
<i>Yarns made for sale :—</i>	Th. lb.	£'000.
Up to No. 40 .. .. .	1,079,775	110,643
Over No. 40 to No. 80 .. .. .	367,722	57,495
Over No. 80 to No. 120 .. .. .	75,475	17,944
Over No. 120 .. .. .	5,724	1,946
<b>TOTAL .. .. .</b>	<b>1,528,696</b>	<b>188,028</b>
<i>Yarns made on commission :—</i>	Th. lb.	£'000.
Up to No. 40 .. .. .	3,013	86
Over No. 40 to No. 80 .. .. .	4,666	208
Over No. 80 to No. 120 .. .. .	2,553	224
Over No. 120 .. .. .	49	6
<b>TOTAL .. .. .</b>	<b>10,281</b>	<b>524</b>

The excess of the quantities here shown over those relating to the total make of single yarn is due to the fact that, in this table, yarns bought for doubling and sold after doubling are shown at both stages, sewing cotton being included among the doubled yarns made. The differences, while extending to all ranges of counts distinguished, are greater for higher than for lower counts. Doublers who purchased the whole of their supplies of yarn showed a total output of 82,909,000 lb. weight; and, of the total weight of yarns returned by firms working on commission, 9,185,000 lb., or about nine-tenths, consisted of doubled yarn. Yarn is, however, doubled by firms who spin the yarns used for doubling or who spin part of the single yarn used and purchase the remainder from other firms. The quantity of doubled yarn made by firms of this class is not known with any precision, but the information available indicates that it may have been between 70,000,000 lb. and 75,000,000 lb. including, it would appear, about 50,000,000 lb. of purchased yarn.

The yarns shown in the Returns of output for 1912 and 1907, including doubled yarns and sewing cotton, amounted to the following totals :—

	1912.	1907.
	£'000.	£'000.
<i>Yarns made for sale—Value</i> ..	86,290	84,534
<i>Yarns made on commission—</i>		
Amount received for work done	202	248

These totals are exclusive of yarns spun and woven in the same establishment, no statement of the value of such yarns having been obtained for those years.

*Other products.*—The output of cotton-spinning firms in 1924 included, in addition to the yarns specified above, the following:—

	Quantity.	Value.
	Th. lb.	£'000.
Cotton waste .. .. .	239,019	5,618
Cotton yarns, reeled and wound .. .. .	..	977
Other cotton manufactures .. .. .	..	81
Other textile manufactures .. .. .	..	335
<b>TOTAL .. .. .</b>		<b>7,011</b>

The particulars of yarns reeled and wound which were furnished to the Census office did not in all cases specify the weight of the yarns. In respect of yarns reeled and wound on commission, for which a sum of £66,000 is recorded as received for the work done, there was also an omission in some cases to state the quantity handled. The Returns showed, further, £3,000 as received for other work done on commission.

*Net output.*—Taking together the value of the goods made and the amounts received for work done on commission for other firms, the total value of the output of the firms making their Returns on schedules for the Cotton Spinning Trade was returned for 1924 as £195,348,000. The cost of materials used was recorded as £147,958,000 and that of work given out as £459,000. The net output amounted therefore to £46,931,000 or £186 per head of the average number of persons employed at the establishments to which the particulars relate.

*Ring- and mule-spun yarns.*—Spinners were requested to furnish voluntarily information showing the quantities of yarn spun by them according to the type of frame used. Particulars were obtained from firms whose aggregate output of cotton yarn amounted to 966,081,000 lb., or 69·2 per cent. of the total cotton yarn spun in the censal year. This aggregate was divided as follows:—

	Th. lb.
Ring-spun yarns .. .. .	325,103
Mule-spun yarns .. .. .	640,978

and was distributed between the various ranges of counts as follows:—

Counts.	Total single yarn made.		Yarn made by firms furnishing information.	
	Th. lb.		Th. lb.	Per cent. of total make.
Up to No. 40 .. .. .	1,021,985		690,041	67·5
Over No. 40 to No. 80 .. .. .	313,710		228,985	73·0
Over No. 80 to No. 120 .. .. .	55,874		44,211	79·1
Over No. 120 .. .. .	3,623		2,844	78·5
<b>TOTAL .. .. .</b>	<b>1,395,192</b>		<b>966,081</b>	<b>69·2</b>

It will be noted that the percentage regarding which this information was furnished was higher for fine than for coarse counts. For

counts above 40's the information relates to 74 per cent. of the make, as compared with less than 68 per cent. of the counts up to 40's. Even if all the ring-spun yarn were in the lowest range of counts, less than half the yarn under 40's spun by the firms furnishing this information would be ring-spun. The absence of particulars regarding over 330 million lb. of yarn in the lowest range of counts deprives the information furnished of much of its importance.

#### Employment in 1924.\*

The number of persons employed in the Cotton Spinning Trade in the week ended 18th October, 1924, was returned as 257,194, viz., 249,783 returned as operative staff (wage-earners) and 7,411 returned as administrative, technical and clerical staff. The distribution of these by sex and age was as follows:—

Sex and age. Week ended October 18th, 1924.	Operatives.	Administrative, technical and clerical.	Total.
<i>Males:—</i>			
Under 18 years .. .. .	18,752	514	19,266
Over 18 years .. .. .	82,197	5,954	88,151
<b>TOTAL—MALES .. .. .</b>	<b>100,949</b>	<b>6,468</b>	<b>107,417</b>
<i>Females:—</i>			
Under 18 years .. .. .	31,925	121	32,046
Over 18 years .. .. .	116,909	822	117,731
<b>TOTAL—FEMALES .. .. .</b>	<b>148,834</b>	<b>943</b>	<b>149,777</b>
<b>TOTAL—MALES AND FEMALES</b>	<b>249,783</b>	<b>7,411</b>	<b>257,194</b>

The variation in the numbers of operatives employed in the course of the year is shown by the following total numbers employed in a week in each month of the censal year.

Week ended:	Number of operatives.	Per cent. of average.	Week ended:	Number of operatives.	Per cent. of average.
Jan. 12th .. .. .	241,714	98·5	July 19th .. .. .	242,421	98·8
Feb. 16th .. .. .	240,249	97·9	Aug. 16th .. .. .	243,089	99·1
March 15th .. .. .	240,997	98·2	Sept. 13th .. .. .	245,489	100·0
April 12th .. .. .	244,392	99·6	Oct. 18th .. .. .	249,783	101·8
May 17th .. .. .	244,810	99·8	Nov. 15th .. .. .	253,093	103·1
June 21st .. .. .	242,371	98·8	Dec. 13th .. .. .	256,219	104·4

The numbers ranged from 2·1 per cent. below the year's average, in February, to 4·4 per cent. above the year's average, in December, the last two months of the year showing larger deviations from the average than any other month. The average for the 12 weeks was 245,386 persons, of whom 99,471 were males and 145,915 were females.

#### Mechanical Power in 1924.†

The engines installed in the establishments at which the numbers employed were as given in the preceding section were of the

\* See Tables III A and III B, page 66.

† See Table IV, page 67.

description shown in the statement which follows, where engines ordinarily in use in the censal year are distinguished from engines in reserve or idle in that year. The kilowatt capacity of electric generators which were driven by engines of the several classes is shown, for convenience, in the same table :—

Kind of engine.	Prime movers (by kind of engine).		Electric generators (by kind of motive power).	
	Ordinarily in use.	In reserve or idle.	Ordinarily in use.	In reserve or idle.
	H.P.	H.P.	Kw.	Kw.
Reciprocating steam engines ..	965,763	56,924	37,366	4,488
Steam turbines .. .. .	56,282	4,234	33,099	801
Gas engines .. .. .	2,076	704	390	162
Petrol and light oil engines ..	—	7	—	—
Heavy oil engines .. .. .	180	—	75	—
Water power .. .. .	4,101	600	2,392	—
<b>TOTAL .. .. .</b>	<b>1,028,402</b>	<b>62,469</b>	<b>73,322</b>	<b>5,451</b>

In addition to the mechanical power shown in the above table under the head *Prime movers*, there were installed *electric motors* driven by purchased electricity, the total capacity of such motors ordinarily in use being 134,513 horse-power and that of motors in reserve or idle, 8,562 horse-power. Electric motors driven, or intended to be driven, by electric current obtained from the generators, particulars of which are given in the above table, were also installed, the capacity of such motors ordinarily in use in the censal year being 75,550 horse-power and that of motors in reserve or idle, 2,411 horse-power.

#### Consumption of cotton.

The information required to be furnished under the terms of the Census of Production Act could not include particulars of the different materials used in spinning, but a voluntary question was included in the schedule issued to firms engaged in cotton spinning, asking for a statement of the amount of each kind of cotton used. Information as to the quantities of raw cotton used was furnished by firms whose output of yarn amounted to 856,607,000 lb. or about 61½ per cent. of the total of yarns spun. The distribution of these yarns by ranges of counts was as shown below :—

Counts of yarns.	Total output returned on schedules for the Cotton Spinning Trade.	Returned by firms stating their consumption of cotton.	
		Quantity.	Proportion of total make.
	Th. lb.	Th. lb.	Per cent.
Up to No. 40 .. .. .	1,020,645	615,013	60·2
Over No. 40 to No. 80 .. .. .	313,709	199,612	63·6
Over No. 80 to No. 120 .. .. .	55,874	39,598	70·9
Over No. 120 .. .. .	3,623	2,384	65·8
<b>TOTAL .. .. .</b>	<b>1,393,851</b>	<b>856,607</b>	<b>61·5</b>

The classes of cotton used by the firms furnishing information regarding their consumption of cotton were as follows :—

	Th. lb.
American .. .. .	639,287
Egyptian .. .. .	219,397
Indian .. .. .	41,091
Peruvian .. .. .	23,827
Brazilian .. .. .	5,706
Other and unspecified growths .. .. .	38,025
<b>TOTAL .. .. .</b>	<b>967,333</b>

The circulars of the Liverpool Cotton Association show that the cotton forwarded to mills during 1924 amounted to about 1,415 to 1,420 million lb.; and about 44·1 million lb. of cotton waste for re-spinning were imported and retained. Mill stocks were lower at the end of January, 1925, than a year earlier by about 10·5 million lb. weight of cotton, and, if a like amount were drawn from stocks in the calendar year 1924, the total quantity of raw cotton available in that year was about 1,425 to 1,430 million lb. to which may be added such quantities of other textile fibres (wool, artificial silk, etc.) as were used for mixing with raw cotton before spinning. The recorded produce from this material and so much of the imported waste as was utilised in the Cotton Spinning Trade was 1,395 million lb. of single yarns; and 51 million lb. of waste for re-spinning were exported. In addition, the manufacturers of bedding and upholsterers and possibly other trades were supplied with cotton spinning waste for use in their work. The amount of waste so supplied is not ascertainable from information in the Census Returns or from other sources generally available. The weight of the yarns made, 1,395 million lb., was nearly 98 per cent. of the aggregate weight of the raw cotton available as estimated above.

The proportion of yarn made to raw cotton used was 88½ per cent. in the case of the production of the firms making returns of the amount and kind of cotton used by them, but account must also be taken of other materials (cotton waste and textile fibres other than cotton) used by these firms in spinning, and of cotton waste as well as of cotton yarn sold by them. No information is available as to the quantities of textile fibres other than cotton which were used by the firms in question. As regards cotton waste, it is clear that, in considering the group of firms as a whole, account should be taken only of that portion of the cotton waste used which was purchased from outside the group, and that portion of the cotton waste sold which was sold to firms outside the group. The quantity of purchased cotton waste which was included in the recorded particulars of materials used by the firms in the group was 37,851,000 lb., but it

is not known how far this waste was purchased from other firms in the group or from firms outside it. Moreover, the whole of this cotton waste was used by firms spinning mainly from waste, who recorded in addition the use of 3·8 million lb. of raw cotton, and whose production of yarn was 36 million lb. out of the total of 856·6 million lb. shown above as the produce of the group of firms that stated their consumption of cotton; the Returns do not show whether cotton waste was used in substantial quantities (in addition to raw cotton) by the remaining firms in the group. The total quantity of waste recorded as sold by all the firms in the group was 142,460,000 lb., but the Returns do not enable this total to be divided into waste sold to (a) firms within the group, (b) cotton spinning firms outside the group, or (c) firms in other trades. It may be added that the total quantity of cotton waste recorded as sold by all firms in the Cotton Spinning Trade in 1924 was about 239 million lb.; and the quantity of cotton yarn which can be identified as the produce of firms spinning entirely or predominantly from waste was about 93 million lb.

#### Machinery equipment of spinning mills.

A further voluntary enquiry was included in the schedule furnished to cotton spinning firms, asking for the number of carding machines, spinning spindles and doubling spindles at their mills at the end of 1924, distinguishing between machinery "in use" and machinery "idle" at that time and excluding obsolete machinery. Information was received from firms whose output amounted to about four-fifths of the total single yarn made in the censal year, and is summarised in the following table:—

Kind of machine.	In use.		Total.	Percentage idle.
	Number.	Number.		
Carding machines:—				
Single revolving flat cards .. ..	59,300	1,500	60,800	2·5
Roller and clearer cards .. ..	6,380	170	6,550	2·6
TOTAL .. ..	65,680	1,670	67,350	2·5
Spinning spindles:—				
Mule .. ..	Thous. 35,845	Thous. 1,096	Thous. 36,941	3·0
Ring .. ..	9,007	631	9,638	6·5
Throstle .. ..	77	21	98	21·2
TOTAL .. ..	44,929	1,748	46,677	3·7
Doubling spindles:—				
Twiner .. ..	Thous. 1,154	Thous. 127	Thous. 1,281	9·9
Ring .. ..	1,395	172	1,567	11·0
Flyer or throstle .. ..	44	24	68	35·3
TOTAL .. ..	2,593	323	2,916	11·1

The output in 1924 of the establishments equipped with these machines included the following:—

	Th. lb.	Per cent. of total for the trade.
Single yarn made .. ..	1,115,206	80·0
Yarn made for sale .. ..	1,194,337	78·1
Yarn made on commission .. ..	8,011	77·9

In this case the counts over 40's and up to 80's were best represented and counts up to 40's yielded a higher relative supply of information than counts over 80's.

Particulars were also furnished regarding machinery equipment in 1912 and 1907. The information obtained in the three years is summarised in the following statement:—

Kind of machinery.	1924.	1912.	1907.
Carding machines .. ..	67,350	62,420	55,130
Spinning spindles (thousands) .. ..	46,677	46,056	37,832
Mule spindles: per cent. of total .. ..	79·1	82·0	84·2
Single yarn made by firms (thousand lb.)	1,115,206	1,608,642	1,335,630
Per cent. of total yarn spun .. ..	80·0	81·1	74·2

The average output of single yarn per mule spindle in use in 1924 and included in these Returns, was 20 lb., and the output per ring spindle in use was 40 lb. For comparison with the Returns for earlier years, when the proportion of spindles not in use was not obtained, the relation of yarn spun to total spindles must be considered. The output in 1924 was about 19 lb. per mule spindle and 38 lb. per ring spindle on this basis. The corresponding figures for 1912 were about 29 lb. per mule spindle and about 62 lb. per ring spindle; for 1907 the averages were about 30 lb. per mule spindle and about 60 lb. per ring spindle. The lower figures for 1924 may be associated with the reduction in the normal working hours and the extensive short-time worked in that year. In what, if any, degree a rise in the average count of yarns spun may have been a contributing factor, the available information is insufficient to show.

#### COTTON WEAVING.

##### Number of Returns.

The number of separate Returns for this trade in 1924 was 1,555. Fifty firms to which schedules were sent did not furnish Returns, but these firms for the most part had relatively small establishments, and they included a number which ceased operations in the course of the censal year. On the basis of the information available it is estimated that they did not employ more than 1,650 persons, and that their net output probably lay between £200,000 and £250,000.

**Production.\****Piece-goods.*

The following table furnishes a summary of the particulars relating to the production of cotton piece-goods in 1924 by the firms making their Returns on schedules for the Cotton Weaving Trade. The output of cotton piece-goods in 1924, wherever made, is also shown in comparison with that of 1912 and 1907.

Piece-goods of cotton or of cotton mixed with other materials.	Unbleached, grey (including unbleached dhooties).	Manufactured wholly or in part of dyed yarn, commonly known as "coloured cottons."	Total of piece-goods.
<i>Made for sale.</i>			
<b>1924.</b>			
Returned on schedules for the Cotton Weaving Trade :—			
Thousand linear yards .. ..	5,066,937	461,896	5,528,833
Thousand square yards .. ..	<b>5,525,211</b>	<b>436,595</b>	<b>5,961,806</b>
Thousand cwts. .. ..	9,297	884	10,181
Value : £'000 .. ..	144,405	17,529	161,934
Returned on schedules for other trades† :—			
Thousand linear yards .. ..	7,991	7,074	15,065
Thousand square yards .. ..	<b>9,989</b>	<b>6,613</b>	<b>16,602</b>
Thousand cwts. .. ..	36	17	53
Value : £'000 .. ..	733	507	1,240
TOTAL :—			
Thousand linear yards .. ..	5,074,928	468,970	5,543,898
Thousand square yards .. ..	<b>5,535,200</b>	<b>443,208</b>	<b>5,978,408</b>
Thousand cwts. .. ..	9,333	901	10,234
Value : £'000 .. ..	145,138	18,036	163,174
<b>1912.</b>			
TOTAL :—			
Thousand linear yards .. ..	7,277,624	659,035	7,981,955
Value : £'000 .. ..	45,296† 82,753 642†	10,833	94,228
<b>1907.</b>			
TOTAL :—			
Thousand linear yards .. ..	6,379,893	643,293	7,030,713
Value : £'000 .. ..	7,527† 71,589 131†	9,784	81,504

† The particulars of quantities shown include estimates made for such output as was returned by value only.

‡ These entries relate to bleached white piece-goods (including bleached dhooties) included in the Returns.

\* See Table II, pages 68-9.

Piece-goods of cotton or of cotton mixed with other materials.	Unbleached, grey (including unbleached dhooties).	Manufactured wholly or in part of dyed yarn, commonly known as "coloured cottons."	Total of piece-goods.
<i>Made on commission.</i>			
<b>1924.</b>			
Returned on schedules for the Cotton Weaving Trades :—			
Thousand linear yards .. ..	12,216	30,499	42,715
Thousand square yards .. ..	<b>12,492</b>	<b>32,883</b>	<b>45,375</b>
Thousand cwts. .. ..	31	73	104
Received for work done : £'000 ..	123	257	380
Returned on schedules for other trades* :—			
Thousand linear yards .. ..	674	2,716	3,390
Thousand square yards .. ..	<b>691</b>	<b>2,897</b>	<b>3,588</b>
Thousand cwts. .. ..	2	8	10
Received for work done : £'000 ..	7	31	38
TOTAL :—			
Thousand linear yards .. ..	12,890	33,215	46,105
Thousand square yards .. ..	<b>13,183</b>	<b>35,780</b>	<b>48,963</b>
Thousand cwts. .. ..	33	81	114
Received for work done : £'000 ..	130	288	418
<b>1912.</b>			
TOTAL :—			
Thousand linear yards .. ..	8,086	60,102	68,188
Received for work done : £'000 ..	39	271	310
<b>1907.</b>			
TOTAL :—			
Thousand linear yards .. ..	11,121	45,846	56,967
Received for work done : £'000 ..	57	215	272

\* The particulars of quantities shown include estimates made for such output as was returned by value only.

In the main, the particulars of goods made on commission do not duplicate those of goods made for sale, since the goods were in most cases woven from yarns supplied by merchants. The total quantity of piece-goods made in 1924 may, therefore, be stated, with but trifling error, as 6,027,000,000 square yards. The linear yardage, stated at 5,590,000,000, includes the estimated equivalent of a small quantity of goods in respect of which only the square yardage was furnished.

The goods made on commission were less than 1 per cent. of the total, and, consequently, any error resulting from an estimate of their value on the assumption of an average value equal to that of the goods made for sale may be treated as negligible for practical purposes. Such an estimate yields a total of £165,000,000 as the value of all piece-goods woven in 1924.

The linear yardage of the output of piece-goods in 1924 was 30.6 per cent. less than that of 1912, and 21.1 per cent. less than that of 1907, the yardage for those years being taken, for this

purpose, to include the small amount of bleached goods returned by weaving firms in 1912 and 1907. The value of the 8,050 million yards of piece-goods shown in the Returns for 1912, estimated as above, was £95,287,000, and that of the 7,088 million yards recorded for 1907 was £82,324,000.

Part of the cotton goods woven enter into consumption at home, or are exported, as unbleached goods. The greater part are, however, bleached, printed or dyed, before passing into the hands of consumers. The quantities of cotton piece-goods bleached, printed or dyed, in 1924, were as follows (see table on p. 192) :—

	<i>Th. sq.</i> <i>yards.</i>	<i>Th. lin.</i> <i>yards.</i>
Bleached, but not dyed or printed .. .. .	1,914,608	1,852,342
Dyed, but not printed ..	981,079	980,864
Printed, whether dyed or not	833,854	799,927
	<u>3,729,541</u>	<u>3,633,133</u>

Of the total output of cotton piece-goods, amounting to 6,027,000,000 square yards, the quantity bleached, dyed or printed represented, on the assumption that these processes resulted in no reduction or increase of the yardage of the goods treated, nearly two-thirds. The exports during 1924 of grey goods and coloured cottons amounted to 1,673,658,000 square yards, and adding this total to the total bleached, dyed or printed, the aggregate, amounting to 5,403,200,000 square yards, falls short of the total woven by about 624,000,000 square yards. This latter figure, with the addition of the yardage of any fabrics which, being partly or wholly woven of dyed yarn and subsequently bleached, may be included both in the total of goods bleached and in the exports of coloured cottons, would appear to express the yardage of grey piece-goods and unbleached coloured cottons available from the year's production for use at home or for making up for export in a more manufactured form.

The total value of the work of bleaching, dyeing, printing and finishing carried out in the United Kingdom in 1924 on cotton piece-goods was returned as £26,500,000 (cf. page 192). If this be added to the estimated value at factory of unbleached piece-goods and coloured cottons (£165,000,000), a total of £191,500,000 is obtained. The cost of packing and making-up, when carried out in separate establishments or departments, must also be taken into account. Packing firms were not asked to show separately the charges for packing different kinds of goods, but the value of that part of their work that related to cotton piece-goods may be estimated at between £2,000,000 and £2,500,000 (cf. page 275), raising the

total value to about £193,800,000. This figure will need to be further increased by the handling expenses and profits of merchants on whose account the finishing processes were carried out, in order to arrive at the value of cotton piece-goods sold for home consumption or for export.

#### Other Cotton Manufactures.

Particulars of the value, and, where available, the quantity of cotton goods, other than those specified in the preceding pages, which were mainly produced by firms engaged in cotton manufacturing, are stated below for each of the years 1924, 1912 and 1907 :—

Products.	1924.			1912.	1907.
	Returned on schedules for the Cotton Weaving Trade.	Returned on schedules for other trades.	Total.	Total.	Total.
	Selling value.				
	£'000.	£'000.	£'000.	£'000.	£'000.
<i>Goods made for sale :—</i>					
Machinery belting (woven hair or cotton) .. .. .	857	—	857	653	438
(Quantity in cwt.)	(48,000)		(48,000)	(90,000)	(55,000)
Tapes and smallwares ..	1,789	159	1,948		
Towels, quilts and counterpanes	3,381	—	3,381	4,120	3,084
Cotton wool and wadding ..	376	22	398		
Yarns, reeled and wound ..	241	1,024	1,265	1,089	866
Manufactured cleaning waste (Quantity in th. lb.)	870	—	870	..	..
Other cotton waste .. .. .	557	..	557	..	..
(Quantity in th. lb.)	(19,530)				
Other cotton manufactures* ..	968	129	1,097	..	..
<b>TOTAL—GOODS MADE FOR SALE</b>	<b>9,039</b>	<b>1,334</b>	<b>10,373</b>	<b>5,862</b>	<b>4,388</b>
	Amounts received for work done.				
	£'000.	£'000.	£'000.	£'000.	£'000.
<i>Goods made on commission :—</i>					
Yarns, reeled and wound ..	30	98	128	68	105
Other cotton manufactures* ..	2	—	2	17	9
<b>TOTAL—WORK DONE ON COMMISSION</b>	<b>32</b>	<b>98</b>	<b>130</b>	<b>85</b>	<b>114</b>

\* This heading applies substantially to woven goods of cotton, and does not cover such products as hosiery and other knitted fabrics, lace, gloves, etc.

#### Other Products.

In addition to the manufactures of cotton specified above, there were also included in the Returns made for 1924 by cotton weaving firms, particulars of textile and other goods mainly produced by other trades, the total value of such goods made by these firms being

£780,000, while £32,000 was received for work done on commission on such goods. The particulars of these goods are shown below.

Products.	Goods made for sale.	Work done on commission.
	Selling value.	Amount received.
	£'000.	£'000.
Woolen and worsted manufactures :—		
Tissues .. .. .	46	} 23
Other manufactures .. .. .	23	
Artificial silk manufactures :—		
Piece-goods, wholly of artificial silk .. .. .	56	} 9
Other products .. .. .	359	
Engine packings and asbestos goods .. .. .	69	
Other textile manufactures .. .. .	221	
Other products .. .. .	6	
<b>TOTAL VALUE OF GOODS MADE AND WORK DONE</b>	<b>780</b>	<b>32</b>

The goods whose values are here shown are dealt with in the Reports on the various trades in which the major part of similar products was made.

#### Net Output.

The total value of the goods made, together with the amount received for work done on commission for other firms, during the censal year by the firms making Returns on schedules for the Cotton Weaving Trade amounted to £172,197,000. The cost of the yarns and other materials used was returned as £135,106,000, and that of work given out as £366,000. The net output amounted, therefore, to £36,725,000 or £133 per head of the average number of persons employed at the establishments to which the particulars relate.

#### Employment in 1924.\*

The number of persons employed in these establishments, in the week ended 18th October, 1924, was returned as 278,371, viz., 270,052 operatives and 8,319 administrative, technical and clerical staff. The division of these by sex and age was as follows :—

Sex and age. Week ended October 18th, 1924.	Operatives.	Administrative, technical and clerical.	Total.
<b>Males :—</b>			
Under 18 years .. .. .	9,272	551	9,823
Over 18 years .. .. .	76,037	6,501	82,538
<b>TOTAL—MALES .. .. .</b>	<b>85,309</b>	<b>7,052</b>	<b>92,361</b>
<b>Females :—</b>			
Under 18 years .. .. .	24,242	214	24,456
Over 18 years .. .. .	160,501	1,053	161,554
<b>TOTAL—FEMALES .. .. .</b>	<b>184,743</b>	<b>1,267</b>	<b>186,010</b>
<b>TOTAL—MALES AND FEMALES</b>	<b>270,052</b>	<b>8,319</b>	<b>278,371</b>

\* See Tables III A and III B, pages 69–70.

The variations in the numbers of operatives employed in the course of the year are shown by the following total numbers employed in a week in each month of the censal year.

Week ended :	Number of operatives.	Per cent. of average.	Week ended :	Number of operatives.	Per cent. of average.
Jan. 12th ..	263,932	98·8	July 19th ..	265,784	99·5
Feb. 16th ..	264,941	99·2	Aug. 16th ..	265,898	99·5
March 15th ..	265,200	99·3	Sept. 13th ..	274,554	102·6
April 12th ..	264,706	99·1	Oct. 18th ..	270,052	101·1
May 17th ..	266,406	99·8	Nov. 15th ..	270,523	101·2
June 21st ..	262,592	98·3	Dec. 13th ..	271,767	101·7

The numbers ranged from 1·7 per cent. below the year's average, in June, to 2·6 per cent. above the year's average, in September. As in the case of cotton spinning, the numbers of operatives working in the last four months of the year were above the year's average, and in the other months they were below that average. The average for the 12 weeks was 267,196 persons, of whom 84,623 were males and 182,573 were females.

#### Mechanical Power in 1924.\*

The engines installed in the establishments at which the numbers employed were as given in the preceding section were of the description shown in the statement which follows, where engines ordinarily in use in the censal year are distinguished from engines in reserve or idle in that year. The kilowatt capacity of electric generators which were driven by engines of the several classes is shown, for convenience, in the same table :—

Kind of engine.	Prime movers (by kind of engine).		Electric generators (by kind of motive power).	
	Ordinarily in use.	In reserve or idle.	Ordinarily in use.	In reserve or idle.
	H.P.	H.P.	Kw.	Kw.
Reciprocating steam engines ..	277,962	32,129	10,780	2,539
Steam turbines .. .. .	8,130	2,550	4,398	1,532
Gas engines .. .. .	3,693	659	323	8
Petrol and light oil engines ..	72	35	8	—
Heavy oil engines .. .. .	132	23	17	—
Water power .. .. .	3,136	231	565	—
<b>TOTAL .. .. .</b>	<b>293,125</b>	<b>35,627</b>	<b>16,091</b>	<b>4,079</b>

In addition to the mechanical power shown in the above table under the head *Prime movers*, there were installed *electric motors* driven by purchased electricity, the total capacity of such motors ordinarily in use being 34,251 horse-power and that of motors in reserve or idle 3,819 horse-power. Electric motors driven, or intended to be driven, by electric energy obtained from the generators, particulars of which are given in the above table, were also

\* See Table IV, page 71.



installed, the capacity of such motors ordinarily in use in the censal year being 13,982 horse-power and that of motors in reserve or idle 484 horse-power. Further, firms whose Returns included a gross output valued at £24,309,000, or 14·1 per cent. of the total gross output, and in whose establishments 35,760 persons were employed, or 13·0 per cent. of the total number employed in the trade, reported that they rented the whole of the power used to drive their machinery. The horse-power utilised was not specified.

#### Consumption of cotton yarn.

The greater part of the available supply of cotton yarn was consumed by the Cotton Weaving Trade in the manufacture of piece-goods, quilts, blankets, smallwares and other goods; important quantities were also used in the manufacture of hosiery, lace, elastic webbing, rope and twine, as well as in the Linen, Silk and Artificial Silk, and Woollen and Worsted Trades, in the production of fabrics of mixed materials. While the information furnished to the Census office was not sufficient to permit of a precise computation of the cotton yarn requirements for each of these purposes, particulars furnished by firms engaged in cotton weaving and in the manufacture of hosiery, lace and elastic webbing, in response to voluntary questions regarding the quantities used by them in the year, together with information obtained from other sources, afford material for roughly approximate estimates.

In the Cotton Weaving Trade, particulars were furnished of cotton yarn used in making about 54 per cent., by weight, of all piece-goods made in the censal year, the quantity of yarn so returned being 623,663,000 lb. The proportion in which the weight of yarns is increased by sizing varies greatly. The Returns show that for the piece-goods made by firms furnishing these particulars, about 1,060 lb. weight of woven goods was on the average made from 1,000 lb. weight of yarn, and that about 65 lb. of waste occurred in manufacture. If these proportions are typical, it would follow that 935 lb. of yarn, with 125 lb. weight added in sizing and dressing, were contained in 1,060 lb. of piece-goods, taking the average of all classes. These proportions, however, express the average of little more than one-half of the output of the Cotton Weaving Trade, and wide variations are shown in the Returns of different firms.

In the Hosiery Trade, particulars were furnished by makers of about 35 per cent. by value of the total estimated make of hosiery, wholly or mainly of cotton\*; in the Lace Trade, the voluntary information regarding cotton yarns used was supplied in reference to about 50 per cent. of the gross value of the output of cotton lace and cotton lace manufactures†; and in the Elastic Webbing Trade the firms furnishing particulars included in their total output goods whose value amounted to about 92 per cent. of the gross value of all goods made by that trade in which cotton yarn formed a material.‡

\* See page 180.

† See page 221.

‡ See page 247.

If the information furnished in each case may be taken as representative of the whole trade concerned, the consumption of cotton yarn may be estimated at the following approximate amounts in the several trades:—

	<i>Million lb.</i>
Cotton weaving .. .. .	1,115
Hosiery manufacture .. .. .	35
Lace manufacture .. .. .	19
Elastic webbing manufacture .. .. .	3
	<hr/>
TOTAL .. .. .	1,172

Calculations relating to the requirements of cotton yarn in the manufacture of sewing cotton, rope and twine, and gloves, and for use with other yarns in the manufacture of silk and artificial silk, linen, woollen and worsted and other textile goods, appear to indicate that not less than 100 million lb. would be needed. Taking account of the fact that 163 million lb. were exported in 1924 and that the net imports were between 7 million and 8 million lb., the requirements thus roughly estimated appear to amount in the aggregate to rather more than the year's make of yarn. In view of the uncertainty arising from the lack of completeness of the replies to the voluntary questions bearing on this subject, and the absence of comprehensive information regarding the relation of the weight of the yarn as first spun and its weight when finally used in manufacture, this result may be mainly of importance in its indication that the proportion of total weight of yarn used to total weight of cotton piece-goods made, shown in the Returns which included this information, may have been fairly representative of the position in the trade as a whole.

#### Machinery equipment of weaving establishments.

The schedules issued to firms in the Cotton Weaving Trade included a request to state voluntarily the number of the looms\* at their works at the end of 1924, with particulars of the kind of looms and their width, and distinguishing between those in use, and those idle. These particulars were furnished by firms whose gross output in the censal year was valued at £123,608,000 or nearly 72 per cent. of the gross output of the trade. Of this total, the output recorded in respect of piece-goods was £119,375,000 (of which £315,000 consisted of payments received for commission work), that of quilts, counterpanes, towels, sponge cloths, cotton duck and smallwares was £3,544,000, and the remaining £689,000 represented other goods such as artificial silk manufactures, machinery belting, etc.

The figures given in the table below are exclusive of the looms of firms manufacturing quilts, counterpanes, towels and other goods

\* Excluding obsolete looms.

included in the above-mentioned sum of £3,544,000. These firms owned 6,008 looms of which 1,599 were idle.

Kind of loom.	Width in reed space.					Total.
	Up to 40 inches.	40-50 inches.	50-60 inches.	60-70 inches.	Over 70 inches.	
<i>Total installed</i> :—	Th. looms.	Th. looms.	Th. looms.	Th. looms.	Th. looms.	Th. looms.
Plain .. ..	145.34	177.93	43.47	7.22	10.12	384.08
Motion .. ..	71.32	43.59	12.17	9.64	3.25	139.97
Fancy .. ..	25.91	26.60	14.71	3.94	1.16	72.32
Not specified ..	1.55	1.17	0.11	—	0.08	2.91
<b>TOTAL .. ..</b>	<b>244.12</b>	<b>249.29</b>	<b>70.46</b>	<b>20.80</b>	<b>14.61</b>	<b>599.28</b>
<i>In use</i> :—						
Plain .. ..	122.93	156.58	38.98	6.38	9.14	334.01
Motion .. ..	60.67	39.64	10.84	8.74	2.80	122.69
Fancy .. ..	19.69	23.33	13.16	3.27	0.89	60.34
Not specified ..	1.43	1.12	0.11	—	0.08	2.74
<b>TOTAL IN USE ..</b>	<b>204.72</b>	<b>220.67</b>	<b>63.09</b>	<b>18.39</b>	<b>12.91</b>	<b>519.78</b>
<b>TOTAL NOT IN USE</b>	<b>39.40</b>	<b>28.62</b>	<b>7.37</b>	<b>2.41</b>	<b>1.70</b>	<b>79.50</b>
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
<i>Percentage not in use</i> :—						
Plain .. ..	15.5	12.0	10.3	11.6	9.7	13.0
Motion .. ..	14.9	9.1	10.9	9.3	13.8	12.4
Fancy .. ..	24.0	12.3	10.5	17.0	23.3	16.6
<b>ALL KINDS .. ..</b>	<b>16.1</b>	<b>11.5</b>	<b>10.5</b>	<b>11.6</b>	<b>11.6</b>	<b>13.3</b>

The output of piece-goods recorded by the firms in whose establishments these looms were installed is shown in the following table, in which the goods made on commission are included at their full sales value (cf. page 39).

Piece-goods of cotton.	Th. linear yards.	Th. square yards.	Th. cwts.	Value : £'000.
Made for sale .. ..	4,143,916	4,527,447	7,577	119,060
Made on commission .. ..	35,159	37,809	81	1,415*
<b>TOTAL .. ..</b>	<b>4,179,075</b>	<b>4,565,256</b>	<b>7,658</b>	<b>120,475</b>
Per cent. of total for the trade .. ..	74.8	75.7	74.0	73.1

\* Estimated value of piece-goods for the weaving of which £315,000 was received.

The particulars stated above show that the looms used in making about one-quarter of the piece-goods woven in the year were not covered by the particulars furnished. Of the looms included in the table, the narrowest class showed the greatest proportion of equipment out of use. These looms, with a reed space of 40 inches or less, were, in proportion to the total number returned, 40.7 per cent., and the looms with a reed space of over 40 but not over 50 inches, formed

roughly the same proportion of the total, being 41.6 per cent. The looms of 50 to 60 inches reed space were 11.8 per cent., those of 60 to 70 inches reed space 3.5 per cent., and looms of over 70 inches reed space were 2.4 per cent. of the total number covered by the Returns. These proportions cannot, however, be assumed to apply to the whole of the looms owned by cotton weaving firms.

It will be found that the average width of the piece-goods woven in the looms recorded in the preceding table was 39.3 inches, the piece-goods woven in establishments not furnishing particulars being, on average, narrower by 2 inches. It appears possible, therefore, that the proportion of narrow looms in use in the latter establishments was greater than would correspond to the distribution shown in the table.

For 1912 and 1907, cotton weaving firms were asked to state the total number of power looms at their works, without distinction of those in use and not in use. The following table shows the particulars recorded by makers of piece-goods for those years in comparison with the corresponding figures for 1924 :—

	1924.	1912.	1907.
Total number of looms :—			
In use .. ..	519,779	648,499	612,159
Not in use .. ..	79,504		
Value of piece-goods made .. ..	£'000 120,475	74,992	66,043
Per cent. of total value for the trade .. ..	73	80	80

The average linear yardage woven on the looms in use in 1924 was about 8,000 yards, the average for all looms, including idle looms, being rather over 6,900 yards. If the Returns for 1912 and 1907 were representative of the entire trade in those years, it may be calculated that the average yardage woven was about 10,000 yards per loom in 1912 and about 9,250 yards in 1907. While these figures for the different years cannot be taken as closely comparable, they may furnish some indication of the effect of the reduction in working hours, and the irregular working during 1924 in reducing output.

#### COTTON SPINNING AND WEAVING, 1924, 1912, AND 1907.

##### Introductory.

For the purposes of any general comparison of the results of the three Censuses of Production, the particulars for 1924 relating to cotton spinning and those relating to cotton weaving must be combined, since at the earlier enquiries the separation of these two branches of the industry was not made.

The following table shows the main results of the three Censuses, but comparisons between these results are subject to the qualifications mentioned in the next paragraph. The aggregates shown are not

quite exhaustive, since 63 firms to which schedules were sent did not furnish Returns in 1924, but these firms for the most part had relatively small establishments and included a number which ceased operations in the course of the censal year. On the basis of the information available it is estimated that they did not employ more than 1,900 persons and that their net output probably lay between £240,000 and £300,000.

Particulars.	Unit.	1924.	1912.	1907.
Value of goods made and work done (Gross output) .. .. .	£'000	367,545	191,757	174,601
Cost of materials used .. .. .	"	283,064	140,138	128,697
Paid for work given out to other firms .. .. .	"	825	1,069	897
Net output .. .. .	"	83,656	50,550	45,007
Average number of persons employed .. .. .	No.	528,312	621,516	572,062
Net output per person employed .. .. .	£	158	81	79
Mechanical power available :—				
Prime movers .. .. .	Th. H.P.	1,420	1,403	1,239
Electric motors driven by purchased electricity .. .. .	"	181	30	(not recorded)

*Qualifications affecting comparisons.*—In considering the above table and the other tables in this Report which show figures for the different censal years, the following qualifications should be borne in mind :—

(1) The comparability of figures relating to value or cost is affected by the changes which have taken place in the general purchasing power of money.

(2) The Censuses of 1907 and 1912 covered the whole of Great Britain and Ireland, but that of 1924 applied only to Great Britain and Northern Ireland. The exclusion of Southern Ireland in 1924 does not seriously affect the comparability of the figures since, in the Report on the Census of Production taken by the Government of the Irish Free State in respect of the year 1926, the only output of the cotton industry separately published was 637,183 sq. yds. of piece-goods, valued at £27,243.

(3) The Censuses of 1907 and 1924 extended to all firms, however small, but in 1912 firms employing not more than five persons (excluding the proprietors) were merely required to state the average number of persons employed by them in the year. Such small firms are rare in the cotton industry; and, according to the information supplied the average number of persons employed in the establishments thus excluded totalled 500, or less than 0·1 per cent. of the number employed by the remaining firms as shown in the above table.

(4) In establishments engaged in both the spinning and weaving sections of the trade, and using in their weaving departments yarns prepared in their spinning departments, such yarns have been recorded as products of the latter and materials of the former departments in 1924, while they were not so recorded in like Returns for 1912 and 1907.

(5) The figures shown above for 1924 include particulars relating to the spinning of cotton yarn by hosiery manufacturers, but corresponding particulars are not included in the figures for 1907 and 1912. The comparability of the figures for the three censal years is not affected by this difference, since the total quantity of cotton yarns spun in mills owned by hosiery manufacturers in 1912 (the only year for which the amount is recorded) was returned as 616,700 lb.

### Production.

*Duplication.*—The value of the goods made and work done, as shown in the first line of the table, is the aggregate of the values shown for their output by the firms making Returns, and should not be interpreted as indicating that the Cotton Trades as a whole produced goods of which the sums stated were the aggregate values. Similarly, the total shown in the table for materials used does not express the cost to the Cotton Trades as a whole of the materials purchased from outside those trades and worked up into their products. The goods made by some of the firms making Returns on the schedules for the Cotton Trades form the materials of other firms in the same trades, and hence, in the total value of goods made, there are included a certain number of double or multiple records of the same articles at different stages of manufacture. Similarly, the total cost of materials used not only represents the cost of materials (e.g. raw cotton) purchased from outside the Cotton Trades, but also includes a record (possibly repeated more than once) of values added to such materials by the firms that successively handled them in the course of their preparation for sale outside the Cotton Trades.

*Value of output of cotton goods free from duplication.*—In the Report on the first Census of Production an estimate was given of the value free from duplication of the output in 1907 of all cotton goods of the kinds mainly produced in the cotton trade, i.e., all kinds except cotton lace, cotton hosiery, elastic webbing and cotton gloves. The goods included in the estimate covered both those returned on schedules for the Cotton Trades and goods of the same kinds returned on other schedules; and their value was taken as in the bleached, dyed or printed condition. The amount of the estimate thus reached was £132,000,000, a figure which the Report stated might be in

excess or defect by about £1,000,000. An approximate estimate similarly constructed for 1924 gives the following result :—

	<i>Million £.</i>
Cotton yarn exported (£27,782,000 f.o.b.), value at mill, about .. .. .	26·9
Cotton piece-goods made (grey, white, dyed, printed, etc.) .. .. .	193·8
Other cotton manufactures made .. .. .	17·2
Estimated value of cotton yarns and waste used in other trades .. .. .	16·0
Cotton waste exported (£2,300,000 f.o.b.), value at mill, about .. .. .	2·1
Total .. .. .	256·0

This total of £256,000,000 may be in excess or defect by £2,000,000 to £3,000,000. It includes the value of the work done on cotton goods by the Textile Finishing Trades and by the Packing Trade, i.e. goods are taken as ready for delivery for export or for the home trade.

*Duplication in output value of Cotton Trades.*—The amount included in the above total of £256,000,000 as representing goods of cotton which were returned on schedules other than those for the Cotton Trades is between £2,000,000 and £2,250,000. The value excluded from the total as representing goods not of cotton which were returned on schedules for the Cotton Trades is between £1,000,000 and £1,250,000. Hence, the value, free from duplication, of the total output of the Cotton Trades (i.e. of firms making Returns on schedules for those trades) may be estimated at a mean figure of about £255,000,000. The extent of duplication is indicated by comparison of this total with the total value of goods made and work done shown in the table on page 48, with the addition to the latter total of the cost of finishing processes and of packing, i.e. with a total of about £397,000,000. The mean figure of £142,000,000 thus obtained as the measure of the duplication in the value of the total output is between 55 and 56 per cent. of the mean value of the output, free from duplication. For 1907 the similar figure of duplication amounted to £55,000,000, or nearly 42 per cent. of the value of the output, free from duplication. The percentage is almost of necessity greater for 1924, since some part of the yarns not duplicated in the Returns for 1907 was necessarily duplicated in those for 1924 owing to the requirement of separate Returns in that year for spinning departments of firms carrying on both spinning and weaving.

*Cost of materials and work given out.*—The cost of materials used by firms making their Returns on schedules for the Cotton Spinning and Weaving Trades was returned as £283,064,000 in 1924, a sum

which, by the exclusion of purchases of the products of other firms in these trades, may be reduced to a figure of about £142,000,000, an amount which may be in excess or defect by £2,000,000 to £3,000,000. The corresponding net figure for 1907 was estimated at about £75,000,000.

The amount paid to other firms for work given out to them was returned as £825,000 in 1924, £1,069,000 in 1912 and £897,000 in 1907.

*Net output.*—The net output in 1924 of the firms making their Returns on schedules for the Cotton Spinning and Weaving Trades (whose gross output was valued at £367,545,000) was £83,656,000; that sum representing, without duplication, the total amount by which the value (at works) of the aggregate output exceeded the cost (at works) of the materials used and the amount paid to other firms for work given out to them.

The net output per head of persons employed in the censal year 1924 was £158, as compared with £81 in 1912 and £79 in 1907.

### Employment.

*Average numbers employed in 1924, 1912 and 1907.*—The average numbers of persons employed by firms whose Returns were made on schedules for the Cotton Trades in 1924, 1912 and 1907 are shown below. For the purpose of this comparison the average numbers of operatives of each sex returned for 1924 (as shown in Tables IIIB on pp. 66 and 70) have been divided between the two age-groups in the proportion shown by the data relating to the week ended 18th October, as given on pages 33 and 42 above. The numbers of administrative, technical and clerical staff returned for that week have been added to the calculated averages for operatives in order to obtain the numbers shown in the column of *Total employed* for 1924.

Sex and age.	1924.		1912.		1907.	
	Operative staff.	Total employed.	Wage earners.	Total employed.	Wage earners.	Total employed.
<i>Males :—</i>						
Under 18 years .. .. .	27,581	28,646	52,834	53,660	50,082	51,153
Over 18 years .. .. .	156,513	168,968	176,694	189,627	157,886	168,827
TOTAL .. .. .	184,094	197,614	229,528	243,287	207,968	219,980
<i>Females :—</i>						
Under 18 years .. .. .	55,293	55,628	95,154	95,227	89,689	89,761
Over 18 years .. .. .	273,195	275,070	282,549	283,002	261,916	262,321
TOTAL .. .. .	328,488	330,698	377,703	378,229	351,605	352,082
TOTAL—MALES AND FEMALES .. .. .	512,582	528,312	607,231	621,516	559,573	572,062

Apart from the fall in the aggregate numbers employed in 1924 as compared with the earlier years, the most notable feature is the large share in that fall taken by the numbers under 18 years of age, more than two-thirds of the entire decrease between 1912 and 1924 falling in this age-division, while the total number of persons over 18 years was greater in 1924 than in 1907. The raising of the school age and the almost complete disappearance of the half-time system played an important part in the decrease of numbers of operatives under 18. The total number of half-timers was nearly 19,000 both in 1912 and 1907, and of these about 10,000 were females.

*Employment in 1924 and 1912 compared with 1907.*—The proportions of the numbers employed in 1924 and in 1912 to the corresponding numbers employed in 1907 (= 100) are shown in the following statement, in preparing which two half-timers have been counted as equivalent to one full-timer.

Sex and age.	Staff of 1924.			Staff of 1912.		
	Operative staff.	Administrative, technical, etc.	Total.	Wage earners.	Salaried persons.	Total.
<i>Males :—</i>						
Under 18 years ..	60.4	99.4	61.3	106.1	77.1	105.4
Over 18 years ..	99.1	113.8	100.1	111.9	118.2	112.3
TOTAL .. ..	90.4	112.5	91.7	110.6	114.5	110.8
<i>Females :—</i>						
Under 18 years ..	65.3	470.8	65.6	106.4	101.4	106.4
Over 18 years ..	104.3	463.0	104.9	107.9	111.8	107.9
TOTAL .. ..	94.8	463.3	95.3	107.5	110.3	107.5
TOTAL—MALES AND FEMALES	93.2	125.9	93.9	108.7	114.4	108.8

While, between 1907 and 1912, the numbers employed were increasing, except in the case of males under 18 engaged in clerical and associated work, the staff of 1924 showed, as compared with 1907, decreases in the aggregate number of operatives, and in the total staff, both due almost entirely to a very marked decrease of young operatives. The growth of the clerical staff is shown by the large relative increases in female staff in the administrative, technical and clerical section. It is worthy of note that those enumerated as *Salaried persons* in 1912 were relatively somewhat more numerous than in 1907, so that the marked relative expansion of this section in 1924 is not a wholly new feature of the post-war census. For the purposes of the above table it has been assumed that the *Wage earners* of the earlier Censuses and the *Operative staff* of the 1924 Census relate to classifications of those employed which were similar.

If that be not the case, comparison is only possible for the total numbers employed in each age-group and of each sex.

*Variations in relative importance of each group of employees.*—The proportion of each of the groups shown in the table of numbers employed to the aggregate number of persons employed at each Census is shown in the following table, two half-timers being counted as equivalent to one full-timer.

Sex and age.	1924.		1912.		1907.	
	Operative staff.	Total employed.	Wage earners.	Total employed.	Wage earners.	Total employed.
<i>Males :—</i>						
Under 18 years ..	5.4	5.4	8.1	8.1	8.3	8.3
Over 18 years ..	30.5	32.0	29.6	31.0	28.7	30.0
TOTAL .. ..	35.9	37.4	37.7	39.1	37.0	38.3
<i>Females :—</i>						
Under 18 years ..	10.8	10.5	15.0	14.7	15.4	15.1
Over 18 years ..	53.3	52.1	47.3	46.2	47.6	46.6
TOTAL .. ..	64.1	62.6	62.3	60.9	63.0	61.7
TOTAL—MALES AND FEMALES .. ..	100.0	100.0	100.0	100.0	100.0	100.0

The male staff, after increasing slightly in proportion to the total between 1907 and 1912, was a somewhat smaller proportion of the total staff in 1924 than in 1907. The adult staff, after increasing from 76.6 per cent. to 77.3 per cent. of the total between 1907 and 1912, was, owing to the causes already mentioned, 84.1 per cent. of the total in 1924.

*Seasonal variation in employment.*—The seasonal variations in employment, so far as the records of the earlier Censuses suffice for their determination, are shown below, the figures representing the numbers of operative staff (wage earners) only.

Month.	1924.		1912.		1907.	
	Number of operatives.	Per cent. of average.	Number of wage earners.	Per cent. of average.	Number of wage earners.	Per cent. of average.
January .. ..	505,646	99.0	604,901	99.6	558,423	99.9
April .. ..	509,098	99.7	606,169	99.8	557,802	99.8
July .. ..	508,205	99.5	607,262	100.0	558,728	100.0
October .. ..	519,835	101.8	610,591	100.6	560,701	100.3
Average for these dates	510,696	100.0	607,231	100.0	558,914	100.0

The average for the twelve monthly returns obtained in 1924 was 512,582 or somewhat in excess of that for the four months to which,

in the earlier years, the particulars obtained were confined. The month for which the numbers returned showed the greatest total was December (527,986), and that for which the total was least was June (504,963).

In 1907 and 1912, the numbers relate to those employed on the last Wednesdays of the months named, and in 1924 to those employed in the second or third week of the month.

### Mechanical Power.

The detailed information relating to mechanical power in 1924 which has already been given for the Cotton Spinning and Cotton Weaving Trades separately, is combined in this section to admit of comparison with the information recorded for 1912 and 1907. The following table sets out the particulars for the three censal years relating to the capacity and kinds of *prime movers*, and the capacity of *electric generators* installed at cotton spinning and weaving factories.

Power equipment.	1924.			1912.	1907.
	Ordinarily in use.	In reserve or idle.	Total.	Total.	Total.
<b>PRIME MOVERS :—</b>	H.P.	H.P.	H.P.	H.P.	H.P.
Reciprocating steam engines .. ..	1,243,725	89,053	1,332,778	1,357,148	1,210,374
Steam turbines .. ..	64,412	6,784	71,196	25,380	8,593
Gas engines .. ..	5,769	1,363	7,132	9,523	8,890
Oil engines .. ..	384	65	449	181	
Water power .. ..	7,237	831	8,068	10,769	11,355
<b>TOTAL .. ..</b>	<b>1,321,527</b>	<b>98,096</b>	<b>1,419,623</b>	<b>1,403,001</b>	<b>1,239,212</b>
<b>ELECTRIC GENERATORS :—</b>	Kw.	Kw.	Kw.	Kw.	Kw.
Driven by—					
Reciprocating steam engines .. ..	48,146	7,027	55,173	41,819	28,906
Steam turbines .. ..	37,497	2,333	39,830	21,313	2,681
Gas engines .. ..	713	170	883	1,337	487
Oil engines .. ..	100	—	100		
Water power .. ..	2,957	—	2,957		
<b>TOTAL .. ..</b>	<b>89,413</b>	<b>9,530</b>	<b>98,943</b>	<b>64,469</b>	<b>32,074</b>

The capacity of *electric motors* at factories in 1924 and in 1912 was as shown below :—

Electric motors.	1924.			1912.
	Ordinarily in use.	In reserve or idle.	Total.	Total.
<b>Driven by—</b>	H.P.	H.P.	H.P.	H.P.
Electricity generated in own works .. ..	89,532	2,895	92,427	46,530
Purchased electricity .. ..	168,764	12,381	181,145	29,903

Particulars of the capacity of electric motors were not required for 1907. The total number of Board of Trade units of electricity purchased for power and lighting purposes in that year was returned as 10,408,000; and 24,475,000 units were generated by dynamos in cotton factories whose aggregate capacity was 22,966 kilowatts, the total capacity of dynamos at cotton factories in that year being returned, as shown above, at 32,074 kilowatts.

In addition to the power generated at factories, or purchased as electrical energy, some establishments were operated wholly by *rented power*. Such establishments in the Cotton Trades returned, in 1924, 6.6 per cent. of the total value of output reported, and employed 6.8 per cent. of the persons employed in those trades. The proportion of output in 1912 reported by firms renting all the power they used was 8.0 per cent., and in 1907, 7.2 per cent. In 1924 such firms were nearly all in the weaving section of the Cotton Trades (see p. 44).

*Mechanical and electrical transmission of power of prime movers.*—Taking 746 kilowatts as equivalent to 1,000 horse-power, and assuming that, except as regards steam turbines, which are generally coupled direct to the electric generators driven by them, a loss of 10 per cent. occurs in the conversion of mechanical into electrical energy, the estimated capacity of prime movers whose power was transmitted electrically and mechanically, was as follows in 1924, 1912 and 1907 :—

Power transmitted.	1924.			1912.	1907.
	Ordinarily in use.	In reserve or idle.	Total.	Total.	Total.
	H.P.	H.P.	H.P.	H.P.	H.P.
Electrically .. ..	127,588	13,847	141,435	92,847	47,373
Mechanically .. ..	1,193,939	84,249	1,278,188	1,310,154	1,191,839

The proportion transmitted electrically may thus be estimated to have increased from less than 4 per cent. in 1907 to nearly 10 per cent. in 1924. The power transmitted electrically, as shown in the above tabular statement, includes electrical energy used for lighting and heating as well as that used for driving motors. The proportion of the latter to the total motive power used was thus, in each year, less than is expressed by the percentages calculable from the table. The replies furnished to the voluntary question in the Census schedule, relating to fuel used, suggest that the expansion in the use of electric motors was responsible for the major part of the increase in the proportion of the power of prime movers which was transmitted electrically. The fact that the prime movers in reserve or idle cannot, in part, be definitely allocated to either mode of transmission has, it will be seen, little importance in the general comparison.

*Proportion of available motive power applied electrically.*—In the Cotton Trades, the electrical application of power covers a comparatively small part of the total field. Making a suitable allowance in respect of electrical energy used for heating and lighting, it appears that, in 1924, little more than one-sixth of all the power available for other purposes, such as the driving of machinery, was applied electrically. Even this relatively small proportion shows a marked increase in comparison with the corresponding figure for 1912, which was less than 6 per cent.

*Power per head of operatives employed.*—If the horse-power of the electric motors be added to that of the prime movers whose power was transmitted mechanically, the total for 1924 is about 1,552,000 horse-power, and that for 1912, 1,387,000 horse-power. For 1907, it appears probable that the total may have been not far from 1,225,000 horse-power. The power equipment in establishments, other than those covered by the above statement of power rented, amounted on the average in 1907 to about 2·4 horse-power, and in 1912 to about 2·5 horse-power per operative employed. In 1924, this proportion had increased to about 3·25 horse-power per head. While the numbers of operatives employed decreased (from 1912 to 1924) by about 15 per cent. in these establishments, the horse-power available increased by 12 per cent., the available horse-power per head increasing by over 30 per cent. Compared with 1907, the relative increase, it would appear, approached 40 per cent.

*Quantity of electricity used.*—In 1924 the returns made voluntarily in respect of establishments having dynamos of a capacity of 30,754 kilowatts in use (or 34·4 per cent. of the total capacity in use) showed that 40,232,000 Board of Trade units of electricity were generated, 30,775,000 units being used for power, 2,780,000 units for heating and lighting the factories and for transport, etc., the remaining 6,677,000 units being used for purposes not distinguished. At the establishments furnishing these particulars there were ordinarily in use, in 1924, electric motors of a capacity of 34,249 horse-power driven from the generators in those establishments. This capacity represents 38·3 per cent. of the total capacity of all motors (in use) driven by generators owned by cotton spinning and weaving firms. Voluntary particulars as to the quantity of electricity purchased were given by firms in whose works motors aggregating 116,454 horse-power, driven by purchased electricity, were in use, or 69·0 per cent. of the total capacity of all motors (in use) driven by purchased electricity owned by cotton spinning and weaving firms. The number of units of electricity purchased by the firms furnishing these particulars was 134,307,000, of which 80,481,000 units were for power, 3,485,000 units for heating and lighting the factories, transport, etc., and the remaining 50,341,000 units for purposes not distinguished.

### Exports and Imports.

#### Yarns.

The total quantities of cotton yarns produced in the United Kingdom during the census years 1924, 1912 and 1907 are shown in the following table in relation to the exports from and the net imports into the United Kingdom in the calendar years 1924, 1912 and 1907.

Counts of yarns.	Production.	Exports.	Net imports.
	Th. lb.	Th. lb.	Th. lb.
<b>1924.</b>			
Up to No. 40 .. ..	1,021,985	76,181	6,842
Over No. 40 to No. 80 .. ..	313,710	61,559	779
Over No. 80 to No. 120 .. ..	55,874	23,377	6
Over No. 120 .. ..	3,623	1,939	21
<b>TOTAL :—</b>			
COUNTS DISTINGUISHED .. ..	} 1,395,192*	{ 163,056	7,648
SEWING COTTON .. ..			
<b>1912.</b>			
YARNS. SEWING COTTON .. ..	} 1,982,775*	{ 243,850	8,266
		22,557	(not stated).
<b>1907.</b>			
YARNS. SEWING COTTON .. ..	} 1,800,000* (approximate).	{ 241,077	9,786
		31,727	(not stated).

\* Total single yarn made, whether sold as such or as doubled yarns or thread.

It appears from these comparisons that the increase of 10 per cent. in the quantity of yarn spun in 1912 as compared with 1907 was retained for use in the United Kingdom. The proportion of the total make that was exported as yarn was about 13·4 per cent. in 1907, 12·3 per cent. in 1912 and 11·7 per cent. in 1924. It will be observed that the imports in 1924 were mainly of yarns of the lowest range of counts. If yarns and sewing cotton be taken together, the weight of the exports represented about 15 per cent. of the weight of single yarn made in 1907, 13·4 per cent. in 1912 and 13·0 per cent. in 1924.

#### Piece-goods.

In the case of piece-goods, the following table furnishes a similar comparison :—

Unit of measure.	Production	Exports.	Net imports.
<b>1924.</b>			
Million linear yards .. ..	5,590	4,649	31
Million square yards .. ..	6,027	4,485	36
Thousand cwts. .. ..	10,348	7,371	150
<b>1912.</b>			
Million linear yards .. ..	8,050	6,913	98
<b>1907.</b>			
Million linear yards .. ..	7,088	6,298	65

The yardage of exports and imports includes the yardage of *flags, handkerchiefs and shawls, in the piece*, in all years, and the yardage of *flags, handkerchiefs and shawls, not in the piece* for 1924, but not completely for 1912 or 1907.\*

The yardage of piece-goods made is stated as reported by the weavers of the goods; the yardage exported is stated after handling, in a large majority of cases, by bleachers, dyers, printers or finishers, and, further, it is understood that, in the case of goods intended for splitting, at least a part of the export takes place after splitting. This is the case, for example, as regards *flags, handkerchiefs and shawls, not in the piece*, exported, when such goods have been woven so as to need division before making up for use. If it may be assumed that the square yardage is not increased or decreased in the handling between the weaver and the packer for export, the linear yardage is certainly increased. The linear yardage of the piece-goods exported in 1924 was 83.2 per cent. of the linear yardage reported as the production in that year; the square yardage exported was 74.4 per cent. of that produced. How much of the difference in these percentages results from splitting, the available information is insufficient to show. From partial estimates obtained from organisations in the sections of the trade particularly affected, it appears that the linear yardage may have been increased by splitting by 300 millions, if not by more, an addition that would bring the total to 5,890 millions and would reduce the percentage exported to 79. The difference between the average width of piece-goods exported and those retained in this country is discussed in a later paragraph.

The figures given in the table show a proportion of linear yardage exported to linear yardage made, of 86 per cent. for 1912 and 89 per cent. for 1907. By how much these percentages would be reduced if the figures of output were stated with reference to goods in the same condition as those exported it is not possible to estimate from the information available. The extent to which splitting affects the comparison may not have been closely similar for the different periods compared. In these circumstances it is desirable

\* The export figures for 1907 and 1912 include *printed flags* (etc.), not in the piece, but not *other flags* (etc.), not in the piece, which were classified as *cotton manufactures, unenumerated*. The net imports for 1907 and 1912 are exclusive of flags, etc., not in the piece, whether printed or not. This difference affects also the figures of exports in the next two tables in this section of the Report.

The figures of exports and net imports for 1924, as shown in the table, include the following quantities of flags, handkerchiefs and shawls, not in the piece, under headings not covered by the figures for 1907 and 1912:—

	Exports (not printed).	Net imports (all kinds).
<i>Flags, handkerchiefs and shawls, not in the piece.</i>		
Million linear yards .. .. .	43.6	0.1
Million square yards .. .. .	28.4	0.6
Thousand cwts. .. .. .	38.1	0.9

to compare the values assigned to the production and to the exports, in spite of the fact that the former are taken ex factory and the latter f.o.b. at port of shipment.

The estimated values of the piece-goods made, including the charges for bleaching, dyeing, printing and finishing, and also those for making-up and packing ascertained for 1924, compare as follows with the declared values of exported piece-goods:—

	1924.	1912.	1907.
	Million £.	Million £.	Million £.
(i) Production ex factory .. .. .	193.8	108.8	94.4
(ii) Exports f.o.b. . . . .	155.6	91.6	81.0
(ii) expressed as a percentage of (i) ..	80.3	84.2	85.8

If account be taken of charges between factory and ship, the percentages here shown will be reduced, probably to figures between 75 and 80. The relative reduction in the proportion of piece-goods exported to piece-goods made is, however, indicated by the figures shown.

The average width of the piece-goods exported in 1924, as resulting from the figures given in the table on page 57, was 34.7 inches. The average width of the goods made and retained in this country, taking the figures as returned, would be shown as about 59 inches, and even were it assumed that 300,000,000 yards are added by splitting between the record of production and that of export the resulting average width of the goods retained would be nearly 45 inches. Whether this figure is in excess of, or is less than, the actual average width of the cotton piece-goods available in 1924 for the home market cannot be determined from the information available. The calculations may, nevertheless, serve to indicate a definite probability that the home market took goods wider, possibly substantially wider, than were sent to overseas markets. It may be noted that there was no country the piece-goods exported to which in 1924 had an average width as great as 45 inches. The widest average is shown for exports to Madras, with an average of 43.4 inches, and the only other case in which an average width of 40 inches was exceeded for that year was that of Switzerland, with an average width of not quite 41 inches. Exports to the Irish Free State averaged 35 inches wide.

The weight of the piece-goods exported in 1924 was 71.1 per cent. of that of the goods made in the year. As 74.4 per cent. of the square yardage was exported, the average weight per square yard was less for the exported goods than for the remainder, apart from any possible variation in weight arising from dyeing and other finishing processes.

The average width of the imported piece-goods retained in the United Kingdom was 41.9 inches. The proportion of the net imports to the production in this country was less in 1924 than in either 1912 or 1907.



The following statement shows the quantities of cotton piece-goods bleached, dyed or printed in 1924, 1912 and 1907 and the quantities of such goods exported and imported in those years :—

Years and classes of cotton piece-goods.	Production.	Exports.	Net imports.
<b>1924.</b>			
	Th. sq. yds.	Th. sq. yds.	Th. sq. yds.
Bleached, but not printed or dyed ..	1,914,608	1,394,207	1,023
Dyed, but not printed .. .. .	981,055	763,205	20,284
Printed, whether dyed or not .. ..	833,854	625,686	6,347
	Th. lin. yds.	Th. lin. yds.	Th. lin. yds.
Bleached, but not printed or dyed ..	1,852,342	1,413,185	876
Dyed, but not printed .. .. .	980,840	858,047	17,418
Printed, whether dyed or not .. ..	799,927	748,718	6,050
<b>1912.</b>			
	Th. lin. yds.	Th. lin. yds.	Th. lin. yds.
Bleached, but not printed or dyed ..	2,538,818	2,048,515	2,811
Dyed, but not printed .. .. .	1,262,938	1,083,388	64,362
Printed, whether dyed or not .. ..	1,305,022	1,248,888	22,660
<b>1907.</b>			
	Th. lin. yds.	Th. lin. yds.	Th. lin. yds.
Bleached, but not printed or dyed ..	2,200,062*	1,769,247	2,517
Dyed, but not printed .. .. .	1,142,524	(not separately recorded)	
Printed, whether dyed or not .. ..	1,326,059	1,207,386	13,573

\* Including 7,527,000 linear yards of cotton piece-goods returned in the bleached state by cotton weaving firms.

The classification of goods shown in the table is that used in the Census schedules, and it agrees broadly with the classification adopted in the Import and Export Returns. In the latter Returns, however, the heading relating to bleached goods is shown as *white, bleached*, and, as already mentioned, it is possible that fabrics woven partly or wholly of dyed yarn and subsequently bleached may be included in the Census Returns as *bleached, but not printed or dyed*, and in the Export Returns as *coloured cottons*, a category not included in the figures for exports and net imports shown in the above table. The export and import figures relating to bleached, dyed and printed piece-goods are also exclusive of *flags, handkerchiefs and shawls, not in the piece*, since the statistics distinguish merely *printed* and *other* categories of these goods, and furnish no means of dividing the latter category according as the goods were bleached, were dyed, or were neither bleached nor dyed (see also footnote, page 58).

The comparison of figures of production with those of exports shows that the square yardage of *bleached cottons* exported in 1924 was about 73 per cent. of the square yardage of piece-goods bleached in the censal year, and that the corresponding proportion was nearly 78 per cent. for *goods dyed in the piece*, and about 75 per cent. for *printed goods*. If the yardage exported is deducted from the yardage produced, the average width of the remainder, were the figures of yardage comparable, would be about 43 inches for *bleached cottons*, 64 inches for *dyed goods* and about 4 yards for *prints*. As

already pointed out, the returns of output refer, at least in part, so far as concerns their linear yardage, to goods made for splitting, but not yet split, while the returns of exports refer to some at least of these goods after splitting. No close comparison of goods produced and goods exported can thus be made, on the basis of linear yardage, without reasonably exact knowledge of the extent of the splitting, that differentiates the return of production from that of export, for each of the great classes of goods distinguished in the last table. The figures of linear yardage, as recorded, indicate an apparent decline in the proportion of exports to production of bleached piece-goods in 1924 as compared with 1912 or 1907, and of printed piece-goods in 1924 as compared with 1912; but as the proportion of "splits" to the totals may have been different in the different years, the recorded figures cannot be interpreted as furnishing a measure of the changes which actually occurred.

#### Other cotton manufactures.

The recorded exports of *machinery belting of woven hair or cotton* in 1924 amounted to 49,238 cwts., valued at £856,000, and the net imports to 436 cwts., valued at £5,700. As shown earlier (page 41), the quantity recorded as made in the year was 48,000 cwts., valued, at factory, at £857,000. The explanation of these figures may lie in some export from the production of earlier years, or in the fact that part of the woven belting produced was recorded under some other and more general description, without sufficient indication of the character of the goods.

The value of the *tapes and smallwares of cotton* distinguished in the Returns of manufacturers in all trades compares as follows with the exports and imports in 1924 :—

	£'000.
Value of output .. .. .	1,948
Value of exports .. .. .	448
Value of net imports .. .. .	1,409

In the case of *cotton waste*, the production, exports and imports in 1924 are shown in the following statement :—

1924.	Manufactured cleaning waste.		Other waste.			
			Returned by spinners and doublers.		Returned by weavers.	
	Th. lb.	£'000.	Th. lb.	£'000.	Th. lb.	£'000.
Production .. .. .	57,642	870	239,019	5,618	19,530	557
			For re-spinning.		For other purposes.	
Exports .. .. .	21,672	457	51,273	1,762	5,580	94
Net imports .. .. .	519	18	44,149	1,797	2,665	78

The omission of a specific heading for *Waste, other than cleaning waste* in the schedule for the Cotton Weaving Trade appears to have led, in numerous cases, to the omission of the particulars relating to such waste.

*Exports and Imports in relation to total output of cotton goods.*

Following on the above comparisons of production, exports and imports of yarns, piece-goods and certain other cotton manufactures considered separately, a comparison may now be made between production, exports and imports of all cotton goods of the kinds mainly produced by the Cotton Spinning and Weaving Trades, including those returned on schedules for other trades. The value, free from duplication, of such goods (including the value added by the work of textile finishing and packing firms) has already been estimated (p. 50) as aggregating about £256,000,000.\* The total value of the exports of cotton goods belonging to the classes included in the aggregate was recorded in 1924 as £199,375,000 f.o.b. at the ports of shipment. Before comparing these totals it is desirable to take account of the difference in the values of the goods at factory and at port. For this purpose recourse must be had to rather broad estimates of charges and commissions to intermediaries. The factory value of the exports may be roughly estimated as lying between £180,000,000 and £185,000,000 or about 70 to 72 per cent. of the value of the goods made.

A like comparison of the factory value of the exports in 1907 of cotton yarns and manufactures (except hosiery, lace and rope)—valued f.o.b. at £105,043,000—with the factory value (£132,000,000) of the total output of cotton goods in the United Kingdom in that year yields a percentage of exports to production lying between 72 and 74 per cent.

The exports for 1924 include about £2,000,000 in respect of cotton goods shipped to the Irish Free State, and the output of 1924 excludes any goods made in that State. The proportion of exports to production was thus less in 1924 than in 1907 in a somewhat larger degree than the comparison of the preceding figures, taken by themselves, suggests.

The total value of the net imports in 1924 of cotton waste, cotton yarns and cotton manufactures was £8,411,000 or about one-thirtieth of the value of the goods of those descriptions made in this country; excluding waste, the total value was £6,537,000 or 2.6 per cent. of the value of the production. The value of goods of home production remaining available for use in this country appears from the figures given above to have lain between £70,000,000 and £75,000,000 at factory. Thus, the net imports, omitting waste, represented about 8 per cent. of the total available for use in this country, whether home

\* This mean figure is adopted here for the purpose of the calculations in view.

produced or imported. For 1907, the net imports, omitting cotton waste, were valued at £4,100,000, or about 3 per cent. of the value of the goods of like classes made. Compared with the total of such goods, whether home produced or imported, available for use in Great Britain and Ireland in 1907, the net imports appear to have represented between 10 and 10½ per cent.

**Wages in 1924.**

Under the Census of Production Act, 1906, the powers of the Board of Trade to require information do not extend to particulars of the amount of wages paid, and, consequently, no information on this head was secured in connexion with the Census of 1924. As a result, however, of the voluntary enquiry undertaken by the Ministry of Labour into wages and hours in the United Kingdom in 1924, information was obtained as to the total wage-bill of a group of firms in the Cotton Spinning and Weaving Trades which made Returns both to the Ministry of Labour and to the Census of Production office. According to the Census records this group of firms employed in the week ended 18th October, 1924, 366,513 operatives out of a total of 519,835 operatives for these trades as a whole, and their net output totalled £60,894,000 out of an aggregate of £83,656,000 for the Cotton Spinning and Weaving Trades as a whole. The total wage-bill of these firms, as returned to the Ministry of Labour, was £33,168,000, representing about 54½ per cent. of their aggregate net output in the censal year. There is no information showing, for firms that did not furnish particulars to the Ministry of Labour, the relation of the wages paid to the net output or showing whether the average wages paid per person employed were approximately the same as, or differed notably from, those paid by firms that supplied particulars of their wage-bills. The varying effects of trade depression and short time working on different firms render any calculation of the aggregate amount of the wage-bill of these trades somewhat hazardous. It may not, however, be unreasonable to estimate the aggregate payments for wages, in the censal year 1924, in the Cotton Spinning and Weaving Trades as not much, if at all, less than £45,000,000, and not much, if at all, more than £47,000,000.

## TABLES.

## COTTON SPINNING.

## I.—Summary of results.

Particulars.	Unit.	England and Wales and N. Ireland*.	Scotland.	United Kingdom.
Value of goods made and work done (Gross output) .. .. .	£'000	188,292	7,056	195,348
Cost of materials used .. .. .	"	144,679	3,279	147,958
Paid for work given out to other firms .. .. .	"	406	53	459
Net output .. .. .	"	43,207	3,724	46,931
Average number of persons employed .. .. .	No.	241,858	10,938	252,796
Net output per person employed .. .. .	£	179	340	186
Mechanical power available :—				
Prime movers .. .. .	H.P.	1,059,621	31,250	1,090,871
Electric motors driven by purchased electricity .. .. .	"	142,622	453	143,075

\* In order to avoid the disclosure of information relating to individual firms, the figures for Northern Ireland have been combined with those for England and Wales.

## II.—Production.

## A.—TOTAL MAKE OF SINGLE COTTON YARN IN 1924.

Counts of yarn.	England and Wales.	Scotland.	Great Britain.
Up to No. 40 .. .. .	Th. lb.	Th. lb.	Th. lb.
Over No. 40 and up to No. 80 .. .. .	1,382,250*	11,601*	1,020,645
Over No. 80 and up to No. 120 .. .. .			313,709
Over No. 120 .. .. .			55,874
TOTAL .. .. .	1,382,250	11,601	1,393,851

\* In order to avoid the possible disclosure of information relating to individual firms, detailed particulars can be given for Great Britain only.

Note.—No single cotton yarn was spun in Northern Ireland in 1924.

## B.—OUTPUT SOLD OR ADDED TO STOCK.

Kind of goods and work done.	Unit.	England and Wales and N. Ireland†.	Scotland.	United Kingdom.
<i>Goods made for sale :—</i>				
<i>Cotton yarns :—</i>				
(Quantity and net selling value).				
Counts : Up to No. 40 .. .. .	Th. lb.	1,504,208*	22,453*	1,078,163
Over No. 40 and up to No. 80 .. .. .	£'000			110,425
Over No. 80 and up to No. 120 .. .. .	Th. lb.			367,299
Over No. 120 .. .. .	£'000			57,429
	Th. lb.			75,475
TOTAL—COTTON YARNS.	£'000	180,918	6,826*	187,744
Cotton waste .. .. .	Th. lb.	235,891	3,128	239,019
Yarns, reeled and wound :—	£'000	5,515	103	5,618
Quantity stated .. .. .	Th. lb.	6,431	—	6,431
Quantity not stated .. .. .	£'000	721	—	721
Other cotton manufactures .. .. .	£'000	*	*	256
Other textile manufactures .. .. .	"	81	—	81
	"	*	*	335
TOTAL VALUE OF GOODS MADE FOR SALE .. .. .	£'000	187,704	7,051	194,755
<i>Work done on commission :—</i>				
<i>Cotton yarns spun :—</i>				
(Quantity of goods and amount received for work done).				
Counts : Up to No. 40 .. .. .	Th. lb.	588*	5*	3,013
Over No. 40 and up to No. 80 .. .. .	£'000			86
Over No. 80 and up to No. 120 .. .. .	Th. lb.			4,666
Over No. 120 .. .. .	£'000			208
	Th. lb.			2,553
Yarns, reeled and wound :—	£'000	588*	5*	49
Quantity stated .. .. .	Th. lb.	—	—	6
Quantity not stated .. .. .	£'000	—	—	2,623
Other work done .. .. .	£'000	—	—	35
	"	—	—	31
TOTAL AMOUNT RECEIVED FOR WORK DONE ON COMMISSION .. .. .	£'000	588	5	593
TOTAL VALUE OF GOODS MADE AND WORK DONE (GROSS OUTPUT) .. .. .	£'000	188,292	7,056	195,348

\* In order to avoid the possible disclosure of information relating to individual firms, detailed particulars can be given for the United Kingdom only.

† See Footnote to Table I.

## III.—Employment.

## A.—NUMBERS EMPLOYED IN WEEK ENDED 18TH OCTOBER, 1924.

Kind of staff.	Males.		Females.		Males and females.	
	Under 18.	All ages.	Under 18.	All ages.	Under 18.	All ages.
<i>England and Wales and Northern Ireland* :—</i>						
Operatives .. ..	18,567	99,651	29,145	139,567	47,712	239,218
Administrative, etc.† ..	492	6,078	115	870	607	6,948
TOTAL .. .. .	19,059	105,729	29,260	140,437	48,319	246,166
<i>Scotland :—</i>						
Operatives .. ..	185	1,298	2,780	9,267	2,965	10,565
Administrative, etc.† ..	22	390	6	73	28	463
TOTAL .. .. .	207	1,688	2,786	9,340	2,993	11,028
<i>United Kingdom :—</i>						
Operatives .. ..	18,752	100,949	31,925	148,834	50,677	249,783
Administrative, etc.† ..	514	6,468	121	943	635	7,411
TOTAL .. .. .	19,266	107,417	32,046	149,777	51,312	257,194

\* See Footnote to Table I. † Administrative, technical and clerical staff.

## B.—OPERATIVES EMPLOYED IN ONE WEEK IN EACH MONTH OF 1924.

*England and Wales and Northern Ireland.\* (Annual average : Males, 98,150 ; Females 136,760 ; Total, 234,910.)*

Week ended.	Males.	Females.	Total.	Week ended.	Males.	Females.	Total.
Jan. 12th ..	97,057	134,237	231,294	July 19th ..	97,521	134,618	232,139
Feb. 16th ..	96,439	133,259	229,698	Aug. 16th ..	97,477	135,042	232,519
March 15th ..	96,544	134,114	230,658	Sept. 13th ..	98,380	136,561	234,941
April 12th ..	97,576	136,525	234,101	Oct. 18th ..	99,651	139,567	239,218
May 17th ..	97,836	136,625	234,461	Nov. 15th ..	100,788	141,614	242,402
June 21st ..	96,941	135,006	231,947	Dec. 13th ..	101,584	143,958	245,542

*Scotland. (Annual average : Males, 1,321 ; Females, 9,155 ; Total, 10,476.)*

Week ended.	Males.	Females.	Total.	Week ended.	Males.	Females.	Total.
Jan. 12th ..	1,335	9,085	10,420	July 19th ..	1,313	8,969	10,282
Feb. 16th ..	1,337	9,214	10,551	Aug. 16th ..	1,329	9,241	10,570
March 15th ..	1,323	9,016	10,339	Sept. 13th ..	1,325	9,223	10,548
Apr. 12th ..	1,307	8,984	10,291	Oct. 18th ..	1,298	9,267	10,565
May 17th ..	1,300	9,049	10,349	Nov. 15th ..	1,343	9,348	10,691
June 21st ..	1,320	9,104	10,424	Dec. 13th ..	1,326	9,351	10,677

*United Kingdom. (Annual average : Males, 99,471 ; Females, 145,915 ; Total, 245,386.)*

Week ended.	Males.	Females.	Total.	Week ended.	Males.	Females.	Total.
Jan. 12th ..	98,392	143,322	241,714	July 19th ..	98,834	143,587	242,421
Feb. 16th ..	97,776	142,473	240,249	Aug. 16th ..	98,806	144,283	243,089
March 15th ..	97,867	143,130	240,997	Sept. 13th ..	99,705	145,784	245,489
April 12th ..	98,883	145,509	244,392	Oct. 18th ..	100,949	148,834	249,783
May 17th ..	99,136	145,674	244,810	Nov. 15th ..	102,131	150,962	253,093
June 21st ..	98,261	144,110	242,371	Dec. 13th ..	102,910	153,309	256,219

\* See Footnote to Table I.

## IV.—Mechanical Power.

## PARTICULARS OF PRIME MOVERS, ELECTRIC GENERATORS AND ELECTRIC MOTORS.

Power equipment.	England and Wales and Northern Ireland.*		Scotland.		United Kingdom.	
	Ordinarily in use.	In reserve or idle.	Ordinarily in use.	In reserve or idle.	Ordinarily in use.	In reserve or idle.
	H.P.	H.P.	H.P.	H.P.	H.P.	H.P.
PRIME MOVERS :—						
Reciprocating steam engines .. ..	954,893	55,849	10,870	1,075	965,763	56,924
Steam turbines .. ..	37,515	4,234	18,767	—	56,282	4,234
Gas engines .. ..	1,933	704	143	—	2,076	704
Petrol and light oil engines .. ..	—	7	—	—	—	7
Heavy oil engines .. ..	60	—	120	—	180	—
Water power .. ..	3,826	600	275	—	4,101	600
TOTAL .. .. .	998,227	61,394	30,175	1,075	1,028,402	62,469
	Kw.	Kw.	Kw.	Kw.	Kw.	Kw.
ELECTRIC GENERATORS :—						
Driven by—						
Reciprocating steam engines .. ..	37,127	4,428	239	60	37,366	4,488
Steam turbines .. ..	19,099	801	14,000	—	33,099	801
Gas engines .. ..	280	162	110	—	390	162
Heavy oil engines ..	—	—	75	—	75	—
Water power .. ..	2,182	—	210	—	2,392	—
TOTAL .. .. .	58,688	5,391	14,634	60	73,322	5,451
ELECTRIC MOTORS :—						
Driven by—	H.P.	H.P.	H.P.	H.P.	H.P.	H.P.
Electricity generated in own works ..	57,261	2,411	18,289	—	75,550	2,411
Purchased electricity	134,161	8,461	352	101	134,513	8,562

\* See Footnote to Table I.

## COTTON WEAVING.

## I.—Summary of results.

Particulars.	Unit.	England and Wales and N. Ireland*.	Scotland.	United Kingdom.
Value of goods made and work done (Gross output) .. .. .	£'000	170,418	1,779	172,197
Cost of materials used .. .. .	„	133,960	1,146	135,106
Paid for work given out to other firms ..	„	335	31	366
Net output .. .. .	„	36,123	602	36,725
Average number of persons employed ..	No.	270,686	4,829	275,515
Net output per person employed ..	£	133	125	133
Mechanical power available :—				
Prime movers .. .. .	H.P.	323,641	5,111	328,752
Electric motors driven by purchased electricity .. .. .	„	36,971	1,099	38,070

\* In order to avoid the disclosure of information relating to individual firms, the figures for Northern Ireland have been combined with those for England and Wales.

## II.—Production.

Kind of goods made and work done.	Unit.	England and Wales and N. Ireland†.	Scotland.	United Kingdom.
<i>Goods made for sale :—</i>				
Piece-goods (of cotton or of cotton mixed with other materials), including flags, handkerchiefs and shawls in the piece :—	(Quantity and net selling value).			
Unbleached, grey (including unbleached dhooties).	<i>Th. lin. yds.</i>	5,047,690	19,247	5,066,937
	<i>Th. sq. yds.</i>	5,500,386	24,825	5,525,211
	<i>Th. cwt.s.</i>	9,248	49	9,297
	£'000	143,510	895	144,405
Manufactured wholly or in part of dyed yarn, and commonly known as "coloured cottons".	<i>Th. lin. yds.</i>	441,256	20,640	461,896
	<i>Th. sq. yds.</i>	408,927	27,668	436,595
	<i>Th. cwt.s.</i>	855	29	884
	£'000	16,900	629	17,529
Machinery belting (woven hair or cotton).	<i>Th. cwt.s.</i>	48	—	48
	£'000	857	—	857
Tapes and smallwares .. ..	£'000	*	*	1,789
Towels, quilts and counterpanes ..	"	*	*	3,381
Cotton wool and wadding .. ..	"	*	*	376
Yarns, reeled and wound :—				
Quantity stated .. ..	<i>Th. lb.</i>	240	—	240
	£'000	73	—	73
Quantity not stated .. ..	£'000	*	*	168
Cotton waste :—				
Manufactured cleaning waste	<i>Th. lb.</i>	55,322	2,320	57,642
	£'000	839	31	870
Other waste .. ..	<i>Th. lb.</i>	19,530	—	19,530
	£'000	557	—	557
Other cotton manufactures .. ..	£'000	881	87	968
Woollen and worsted manufactures :—				
Tissues .. ..	"	*	*	46
Other manufactures .. ..	"	*	*	23
Artificial silk manufactures, other than apparel :—				
Piece-goods made wholly from artificial silk (including plushes) .. ..	"	56	—	56
Other sorts .. ..	"	*	*	359
Engine packings and asbestos goods .. ..	"	69	—	69
Other textile manufactures .. ..	"	221	—	221
Other products .. ..	"	6	—	6
TOTAL VALUE OF GOODS MADE .. ..	£'000	170,032	1,721	171,753

\*In order to avoid the possible disclosure of information relating to individual firms, detailed particulars can be given for the United Kingdom only.

## II.—Production—continued.

Kind of goods made and work done.	Unit.	England and Wales and N. Ireland†.	Scotland.	United Kingdom.
<i>Work done on commission :—</i>				
Piece-goods woven (of cotton or of cotton mixed with other materials), including flags, handkerchiefs and shawls in the piece :—	(Quantity of goods and amount received for work done).			
Unbleached, grey (including unbleached dhooties).	<i>Th. lin. yds.</i>	8,337	3,879	12,216
	<i>Th. sq. yds.</i>	8,481	4,011	12,492
	<i>Th. cwt.s.</i>	25	6	31
	£'000	89	34	123
Manufactured wholly or in part of dyed yarn, and commonly known as "coloured cottons".	<i>Th. lin. yds.</i>	28,568	1,931	30,499
	<i>Th. sq. yds.</i>	31,134	1,749	32,883
	<i>Th. cwt.s.</i>	67	6	73
	£'000	233	24	257
Yarns, reeled and wound :—				
Quantity stated .. ..	<i>Th. lb.</i>	904	—	904
	£'000	11	—	11
Quantity not stated .. ..	£'000	19	—	19
Other cotton manufactures .. ..	"	2	—	2
Other textile manufactures made and work done .. ..	"	32	—	32
TOTAL AMOUNT RECEIVED FOR WORK DONE ON COMMISSION ..	£'000	386	58	444
TOTAL VALUE OF GOODS MADE AND WORK DONE (GROSS OUTPUT) ..	£'000	170,418	1,779	172,197

† See Footnote to Table I.

## III.—Employment.

## A.—NUMBERS EMPLOYED IN WEEK ENDED 18TH OCTOBER, 1924.

Kind of staff.	Males.		Females.		Males and females.	
	Under 18.	All ages.	Under 18.	All ages.	Under 18.	All ages.
<i>England and Wales and Northern Ireland :—*</i>						
Operatives .. ..	9,112	84,321	23,479	181,193	32,591	265,514
Administrative, etc.†	545	6,888	205	1,178	750	8,066
TOTAL .. ..	9,657	91,209	23,684	182,371	33,341	273,580
<i>Scotland :—</i>						
Operatives .. ..	160	988	763	3,550	923	4,538
Administrative, etc.†	6	164	9	89	15	253
TOTAL .. ..	166	1,152	772	3,639	938	4,791
<i>United Kingdom :—</i>						
Operatives .. ..	9,272	85,309	24,242	184,743	33,514	270,052
Administrative, etc.†	551	7,052	214	1,267	765	8,319
TOTAL .. ..	9,823	92,361	24,456	186,010	34,279	278,371

\* See Footnote to Table I.

† Administrative, technical and clerical staff.

## B.—OPERATIVES EMPLOYED IN ONE WEEK IN EACH MONTH OF 1924.

England and Wales and Northern Ireland.\* (Annual average: Males, 83,626; Females, 178,994; Total, 262,620.)

Week ended.	England and Wales and Northern Ireland.*			Week ended.	England and Wales and Northern Ireland.*		
	Males.	Females.	Total.		Males.	Females.	Total.
Jan. 12th ..	82,633	176,806	259,439	July 19th ..	82,811	178,387	261,198
Feb. 16th ..	82,866	177,550	260,416	Aug. 16th ..	83,336	177,941	261,277
March 15th ..	82,812	177,788	260,600	Sept. 13th ..	87,181	182,742	269,923
April 12th ..	82,889	177,262	260,151	Oct. 18th ..	84,321	181,193	265,514
May 17th ..	83,238	178,585	261,823	Nov. 15th ..	84,643	181,295	265,938
June 21st ..	82,042	176,001	258,043	Dec. 13th ..	84,734	182,383	267,117

Scotland. (Annual average: Males, 997; Females, 3,579; Total, 4,576.)

Week ended.	Scotland.			Week ended.	Scotland.		
	Males.	Females.	Total.		Males.	Females.	Total.
Jan. 12th ..	1,000	3,493	4,493	July 19th ..	1,014	3,572	4,586
Feb. 16th ..	990	3,535	4,525	Aug. 16th ..	1,005	3,616	4,621
March 15th ..	987	3,613	4,600	Sept. 13th ..	990	3,641	4,631
April 12th ..	990	3,565	4,555	Oct. 18th ..	988	3,550	4,538
May 17th ..	997	3,586	4,583	Nov. 15th ..	1,006	3,579	4,585
June 21st ..	998	3,551	4,549	Dec. 13th ..	1,000	3,650	4,650

United Kingdom. (Annual average: Males, 84,623; Females, 182,573; Total, 267,196.)

Week ended.	United Kingdom.			Week ended.	United Kingdom.		
	Males.	Females.	Total.		Males.	Females.	Total.
Jan. 12th ..	83,633	180,299	263,932	July 19th ..	83,825	181,959	265,784
Feb. 16th ..	83,856	181,085	264,941	Aug. 16th ..	84,341	181,557	265,898
March 15th ..	83,799	181,401	265,200	Sept. 13th ..	88,171	186,383	274,554
April 12th ..	83,879	180,827	264,706	Oct. 18th ..	85,309	184,743	270,052
May 17th ..	84,235	182,171	266,406	Nov. 15th ..	85,649	184,874	270,523
June 21st ..	83,040	179,552	262,592	Dec. 13th ..	85,734	186,033	271,767

\* See Footnote to Table I.

## IV.—Mechanical Power.

## PARTICULARS OF PRIME MOVERS, ELECTRIC GENERATORS AND ELECTRIC MOTORS.

Power equipment.	England and Wales and N. Ireland.*		Scotland.		United Kingdom.	
	Ordinarily in use.	In reserve or idle.	Ordinarily in use.	In reserve or idle.	Ordinarily in use.	In reserve or idle.
PRIME MOVERS :—	H.P.	H.P.	H.P.	H.P.	H.P.	H.P.
Reciprocating steam engines .. ..	275,614	31,231	2,348	898	277,962	32,129
Steam turbines .. ..	7,700	2,550	430	—	8,130	2,550
Gas engines .. ..	3,512	659	181	—	3,693	659
Petrol and light oil engines .. ..	64	35	8	—	72	35
Heavy oil engines .. ..	132	23	—	—	132	23
Water power .. ..	1,890	231	1,246	—	3,136	231
TOTAL .. ..	288,912	34,729	4,213	898	293,125	35,627
ELECTRIC GENERATORS :—	Kw.	Kw.	Kw.	Kw.	Kw.	Kw.
Driven by—						
Reciprocating steam engines .. ..	10,628	2,539	152	—	10,780	2,539
Steam turbines .. ..	4,398	1,532	—	—	4,398	1,532
Gas engines .. ..	318	8	5	—	323	8
Petrol and light oil engines .. ..	8	—	—	—	8	—
Heavy oil engines .. ..	17	—	—	—	17	—
Water power .. ..	521	—	44	—	565	—
TOTAL .. ..	15,890	4,079	201	—	16,091	4,079
ELECTRIC MOTORS :—	H.P.	H.P.	H.P.	H.P.	H.P.	H.P.
Driven by—						
Electricity generated in own works .. ..	13,966	484	16	—	13,982	484
Purchased electricity .. ..	33,266	3,705	985	114	34,251	3,819

\* See Footnote to Table I.