

## THE TINPLATE TRADE.

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## Introductory.\*

The tables on pages 74 and 75 are based on returns received from firms in England and Wales whose business in 1924 consisted wholly or mainly in the manufacture of tinned plates and tinned sheets. The number of such separate returns was 84. The industry is not, and has not been, carried on in Scotland or Ireland.

*Summary of results.*—The following table shows the main results of the Censuses of 1924, 1912, and 1907, but it should be borne in mind, in considering this and other tables in this report which show particulars for different censal years, that 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. The output omitted in 1912 by the exclusion in that year of returns from firms employing not more than five persons was negligible in this trade and particulars for that year are given throughout.

Particulars.	Unit.	1924.	1912.	1907.
Value of goods made (Gross output)	£'000	22,557	11,312	9,167
Cost of materials used .. .. .	"	16,185	8,664	7,158
Net output .. .. .	"	6,372	2,648	2,009
Average number of persons employed	No.	27,968	25,501	20,628
Net output per person employed..	£	228	104	97
Mechanical power available :—				
Prime movers .. .. .	H.P.	103,255	92,227	68,842
Electric motors driven by purchased electricity .. .. .	"	4,578	2,080	(not recorded.)

\* See also the Notes on pages vii-xv.

*Value of output and cost of materials.*—The figures in the above table representing the value of goods made and the cost of materials used are the aggregates of the figures recorded by the firms that made returns, and, as explained in paragraphs (i) and (ii) on pages xii and xiii, they may over-state the value of the output of, and the cost of materials used by, the Tinplate Trade considered as a whole. The matter is discussed on page 69, where it is estimated that the value, free from duplication, of the output of the Tinplate Trade in 1924 lay between £22,300,000 and £22,550,000, and that the cost of materials purchased from sources outside the trade and worked up into its products lay between £15,935,000 and £16,185,000.

### Production.

The detailed information relating to the output of the Tinplate Trade in 1924 will be found in Table II on page 74.

*Total make of black plates.*—Firms that made their returns on schedules for the Tinplate Trade and the Iron and Steel (Smelting, Rolling and Founding) Trades were required to state the total quantity of plates rolled by them, whether subsequently coated by them or not. The total quantity so returned was 821,700 tons, and the total make of black sheets\* was similarly ascertained to be 1,020,400 tons for the business years of the firms that made the returns. The total make recorded by firms that made returns on schedules for the Tinplate Trade was 784,300 tons of black plates and 80,400 tons of black sheets. The total make of black plates and black sheets was not separately ascertained in 1907 or 1912 (see page 44).

*Output sold or added to stock.*—The following table shows, for the censal years 1924, 1912, and 1907, the total output of the principal products of the Tinplate Trade as returned on schedules for all trades:—

Kind of goods.	1924.		1912.		1907.	
	Quantity.	Selling value.	Quantity.	Selling value.	Quantity.	Selling value.
	Th. tons.	£'000.	Th. tons.	£'000.	Th. tons.	£'000.
Tinned plates .. ..	733.1	17,721	654.4	9,350	529	7,402
Tinned and terne sheets .. ..	20.7	609				
Terne plates .. ..	24.9	606				
Total—Coated plates and sheets .. ..	778.7	18,936	654.4	9,350	529	7,402
Black plates .. ..	144.9	2,196	112.3	1,020	108	1,023
<b>TOTAL .. ..</b>	<b>923.6</b>	<b>21,132</b>	<b>766.7</b>	<b>10,370</b>	<b>637</b>	<b>8,425</b>

With the exception of 36,200 tons of black plates, valued at £378,000, returned on schedules for the Iron and Steel Trades (see page 61), all the output in 1924 shown in the above table was returned by firms in the Tinplate Trade.

\*See page 39.

The figures for tinned and terne plates and sheets include tinned plates and sheets, shaped, decorated, etc., for boxes and other containers. They, therefore, indicate the total make as well as the quantity made for sale or for stock, as no such coated plates and sheets were produced outside the Tinplate Trade. Firms that in 1907 had an output of 424,000 tons, or 80 per cent. of the output of tinned and terne plates and sheets, furnished information showing that 99.6 per cent. of their output in that year consisted of plates up to 54 inches by 28 inches and the remainder of sheets over those dimensions. These figures do not form a sufficient basis for an estimate of the total make in 1907 of tinned and terne plates and sheets respectively for comparison with the figures returned in respect of output in 1924.

The total quantity of black plates returned to the Census showed, after allowing for imports and exports, a supply of 784,000 tons for home uses in 1924, and after allowing for a net loss of one per cent. in the coating and trimming processes, the 758,000 tons of tinned and terne plates would require about 766,000 tons of black plates, leaving about 18,000 tons of black plates for use in the motor car, hollow-ware, and other trades, and for changes in rollers' stocks.

*Other products.*—In addition to the plates and sheets shown in the previous table, firms that made their returns on schedules for the Tinplate Trade recorded the output shown in the following statement. These goods, being of kinds mainly produced by other trades, are dealt with in the reports on those trades.

Kind of goods.	1924.		1912.		1907.	
	Quantity.	Selling value.	Quantity.	Selling value.	Quantity.	Selling value.
	Th. tons.	£'000.	Th. tons.	£'000.	Th. tons.	£'000.
Scrap steel (shearings, etc.) .. ..	201.1	609	168.7	455	..	329
Black sheets .. ..	53.3	923	27.3	249	35	320
Galvanised sheets .. ..	7.8	172	13.8	190	..	55
Other goods (including waste) .. ..	..	99	..	48	..	38
<b>TOTAL .. ..</b>	<b>..</b>	<b>1,803</b>	<b>..</b>	<b>942</b>	<b>..</b>	<b>742</b>

*Value of output free from duplication.*—The value of the gross output of the Tinplate Trade in 1924 was returned as £22,557,000, but this sum may contain some duplication in respect of plates and sheets sold by the makers to firms that coated them. The quantity of black sheets coated by the makers was 27,100 tons, which closely corresponds with the aggregate (28,500 tons) of tinned, terne, and galvanised sheets, and it may be concluded from this, as well as from a scrutiny of the returns, that practically all the 53,300 tons of black sheets made for sale or for stock were, in fact, sold out of the trade or added to makers' stocks. The returns also indicate that 15,100 tons of tinned plates were coated by firms that did not roll black

plate, but purchased their requirements from rolling firms that made their returns on schedules for the Tinplate Trade, from firms that furnished returns on schedules for other trades, or from imported supplies. The possible extent of this duplication is £250,000, on the basis of the average value returned for black plates by firms in the Tinplate Trade. The probable net value of the output of the Tinplate Trade, free from duplication, may thus be estimated as lying between £22,300,000 and £22,550,000 for 1924. The corresponding estimate for 1907 was £8,796,000.

*Cost of materials and work given out.*—The cost of materials used by firms that made their returns on schedules for the Tinplate Trade was returned as £16,185,000 in 1924, a sum which, by the exclusion of purchases of the products of other firms in the same trade, may be reduced to an amount lying between that figure and £15,935,000; the corresponding net figure for 1907 was approximately £6,787,000.

*Quantities of certain materials used.*—In response to a request for information, firms in the Tinplate Trade with an output of 790,610 tons of black sheets and plates, or about 88 per cent. of the total make, stated that they used 886,590 tons of tinplate bars, 58,890 tons of sheet bars, and 23,150 tons of bars not distinguished. The loss in conversion was thus about 18·4 per cent.

*Net output.*—The net output in 1924 of the firms that made their returns on schedules for the Tinplate Trade (whose gross output was valued at £22,557,000) was £6,372,000, that sum representing, without duplication, the total amount by which the value, as delivered, of the aggregate output exceeded the cost, as purchased, of the materials used.

The net output per head of persons employed in the censal year 1924 was £228, as compared with £97 in 1907.

*Exports and imports.*—The great bulk of the tinned plates made in the United Kingdom are exported. For tinned and terne plates and sheets taken together, the following statement shows the position at the three Censuses:—

	1924.	1912.	1907.
	In thousand tons.		
Production .. .. .	778·7	654·4	529·0
Exports .. .. .	554·8	481·1	405·3
Net imports .. .. .	0·9	Not shown separately.	
Available for use in			
United Kingdom ..	224·8	173·3	123·7

In 1907, the proportion of the output that was exported was 76·6 per cent.; in 1912 it had fallen to 73·5 per cent., and in 1924, to 71·2 per cent. Between 1907 and 1924 production had increased by 48·7 per cent., exports by 36·9 per cent., and the amount available at home had practically doubled. This increase in home consumption is no doubt due to the increased use of tinplate in packing goods of various kinds for retail sale, and to the growth of the canning industry. In 1924 the exports of tinned plates were 539,500 tons,

or 73·6 per cent. of the total make; of tinned and terne sheets, 5,000 tons, or 24·2 per cent.; of terne plates, 10,300 tons, or 41·4 per cent.

The exports of black plates in 1924 were 44,400 tons and retained imports 6,700 tons.

#### 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 Tinplate Trade 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, 21,708 operatives, or 79 per cent. of the total of 27,452 operatives for the trade as a whole, and their net output totalled £5,020,000, or 79 per cent. of the aggregate net output of £6,372,000 for the trade as a whole. The total wage-bill of these firms, as returned to the Ministry of Labour, was £3,542,000, representing about 71 per cent. of their aggregate net output.

#### Employment.

The detailed information relating to employment in 1924 is summarised in Table III on page 75. The following table sets out the particulars for that year together with those relating to the two previous censal years. For the purpose of this comparison, the average numbers of operatives of each sex returned for 1924 have been divided between the two age-groups in the proportions shown by the data relating to the week ended 18th October.

Average number.	Males.		Females.		Males and females.	
	Under 18.	All ages.	Under 18.	All ages.	Under 18.	All ages.
<b>1924.</b>						
Operatives .. .. .	3,778	23,313	1,260	3,785	5,038	27,098
Administrative, etc. ..	88	796	5	74	93	870
<b>TOTAL .. .. .</b>	<b>3,866</b>	<b>24,109</b>	<b>1,265</b>	<b>3,859</b>	<b>5,131</b>	<b>27,968</b>
<b>1912.</b>						
Wage earners .. .. .	3,294	21,849	1,065	3,055	4,359	24,904
Salaried .. .. .	68	593	4	4	72	597
<b>TOTAL .. .. .</b>	<b>3,362</b>	<b>22,442</b>	<b>1,069</b>	<b>3,059</b>	<b>4,431</b>	<b>25,501</b>
<b>1907.</b>						
Wage earners .. .. .	2,838	17,456	792	2,603	3,630	20,059
Salaried .. .. .	72	567	—	2	72	569
<b>TOTAL .. .. .</b>	<b>2,910</b>	<b>18,023</b>	<b>792</b>	<b>2,605</b>	<b>3,702</b>	<b>20,628</b>

The numbers of operatives recorded month by month in 1924 ranged from 517 above the average, in September, to 1,591 below the average, in December (see Table IIIB, page 75). The average number recorded for months other than April and December, was 27,321, of whom 3,816 were females, variations being within a very narrow range.

### Mechanical Power.

The detailed information relating to mechanical power in 1924 is summarised in Table IV, on page 75. 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.

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 .. ..	88,610	4,528	93,138	88,522	66,869
Steam turbines .. ..	6,066	2,666	8,732	2,680	—
Gas engines .. ..	45	—	45	10	—
Petrol and light oil engines .. ..	55	15	70	150	113
Heavy oil engines .. ..	—	—	—	—	—
Water power .. ..	1,170	100	1,270	865	1,560
Other .. ..	—	—	—	—	300
<b>TOTAL .. ..</b>	<b>95,946</b>	<b>7,309</b>	<b>103,255</b>	<b>92,227</b>	<b>68,842</b>
<b>ELECTRIC GENERATORS :—</b>	Kw.	Kw.	Kw.	Kw.	Kw.
Driven by—					
Reciprocating steam engines ..	3,981	1,227	5,208	3,554	1,144
Steam turbines .. ..	4,500	2,000	6,500	2,000	—
Gas engines .. ..	38	—	38	6*	9*
<b>TOTAL .. ..</b>	<b>8,519</b>	<b>3,227</b>	<b>11,746</b>	<b>5,560</b>	<b>1,153</b>

\* Returned as driven by *other prime movers*.

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

Electric motors.	1924.			1912.
	Ordinarily in use.	In reserve or idle.	Total.	Total.
Driven by—	H.P.	H.P.	H.P.	H.P.
Electricity generated in own works .. ..	10,218	1,059	11,277	5,442
Purchased electricity .. ..	4,438	140	4,578	2,080

Corresponding information was 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 330,000.

### Plant in 1924.

Voluntary information as to the number of tinplate mills and sheet mills in 1924 was furnished by firms whose output of tinned and terne plates and sheets amounted to 682,120 tons, or nearly 88 per cent. of the total production in the year. These firms stated that the total number of effective tinplate mills owned by them at the end of 1924 was 396, and that 354 were, on the average, in operation throughout the year : 28 effective sheet mills were also reported, all of which were in operation throughout the year.

## TABLES.

## I.—Summary of results.

Note.—No production was recorded in Scotland or in Northern Ireland.

Particulars.	Unit.	England and Wales.
Value of goods made (Gross output) .. .. .	£'000	22,557
Cost of materials used .. .. .	"	16,185
Net output .. .. .	"	6,372
Average number of persons employed .. .. .	No.	27,968
Net output per person employed .. .. .	£	228
Mechanical power available :—		
Prime movers .. .. .	H.P.	103,255
Electric motors driven by purchased electricity .. .. .	"	4,578

## II.—Production.

Goods sold or added to stock.	England and Wales.	
	Quantity.	Selling value.
	Th. tons.	£'000.
Tinned plates (including tinned plates and sheets, shaped, decorated, etc., for boxes and other containers) .. .. .	733.1	17,721
Tinned and terne sheets .. .. .	20.7	609
Terne plates .. .. .	24.9	606
<b>TOTAL—COATED PLATES AND SHEETS .. .. .</b>	<b>778.7</b>	<b>18,936</b>
Black plates (up to 54 in. by 28 in.) including Canada plates	108.7	1,818
Black sheets (over 54 in. by 28 in.) .. .. .	53.3	923
Galvanised sheets .. .. .	7.8	172
Other iron and steel manufactures .. .. .	..	6
Scrap iron and steel (shearings, etc.) .. .. .	201.1	609
Other goods (including waste) .. .. .	..	93
<b>TOTAL VALUE OF GOODS MADE (GROSS OUTPUT) .. .. .</b>	<b>..</b>	<b>22,557</b>

## 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</i> :—						
Operatives .. .. .	3,824	23,592	1,285	3,860	5,109	27,452
Administrative, technical and clerical staff .. .. .	88	796	5	74	93	870
<b>TOTAL .. .. .</b>	<b>3,912</b>	<b>24,388</b>	<b>1,290</b>	<b>3,934</b>	<b>5,202</b>	<b>28,322</b>

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

*England and Wales.* (Annual average : Males, 23,313 ; Females, 3,785 ; Total, 27,098.)

Week ended.	Males.	Females.	Total.	Week ended.	Males.	Females.	Total.
Jan. 12th ..	23,525	3,783	27,308	July 19th ..	23,523	3,851	27,374
Feb. 16th ..	23,433	3,821	27,254	Aug. 16th ..	23,459	3,805	27,264
March 15th ..	23,445	3,838	27,283	Sept. 13th ..	23,788	3,827	27,615
April 12th ..	22,634	3,825	26,459	Oct. 18th ..	23,592	3,860	27,452
May 17th ..	23,407	3,807	27,214	Nov. 15th ..	23,330	3,755	27,085
June 21st ..	23,545	3,816	27,361	Dec. 13th ..	22,069	3,438	25,507

## IV.—Mechanical Power.

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

## ENGLAND AND WALES.

Power equipment.	Ordinarily in use.	In reserve or idle.	Power equipment.	Ordinarily in use.	In reserve or idle.
	H.P.	H.P.		Kw.	Kw.
<b>PRIME MOVERS—</b>			<b>ELECTRIC GENERATORS—</b>		
Reciprocating steam engines .. .. .	88,610	4,528	Driven by—		
Steam turbines .. .. .	6,066	2,666	Reciprocating steam engines .. .. .	3,981	1,227
Gas engines .. .. .	45	—	Steam turbines .. .. .	4,500	2,000
Petrol and light oil engines .. .. .	55	15	Gas engines .. .. .	38	—
Water power .. .. .	1,170	100	<b>TOTAL .. .. .</b>	<b>8,519</b>	<b>3,227</b>
<b>TOTAL .. .. .</b>	<b>95,946</b>	<b>7,309</b>	<b>TOTAL OF ELECTRIC GENERATORS INSTALLED .. .. .</b>	<b>11,746</b>	
<b>TOTAL OF PRIME MOVERS INSTALLED</b>	<b>103,255</b>		<b>ELECTRIC MOTORS—</b>		
			Driven by—		
			Electricity generated in own works .. .. .	10,218	1,059
			Purchased electricity .. .. .	4,438	140