

PART III  
PRODUCTION

CHAPTER I

THE COURSE OF PHYSICAL PRODUCTION  
OVER THE BOOM, SLUMP AND DOLDRUMS

A LARGE part of any country's economic activity is, of course, always devoted to things other than physical production — transport, commerce, the professions, personal service, Government service, central and local, and so on. According to the Census of 1921, out of 12,113,000 men gainfully occupied, 4,887,000 were engaged in these occupations, and out of 5,065,000 women, 3,016,000 were so engaged. Thus among men gainfully occupied some 60 per cent were concerned with physical production, among women some 40 per cent, among persons some 53 per cent. The proportions were very much the same in 1911. These percentages are thus not very high, perhaps a good deal lower than some people would have been inclined to guess. Consequently, in spite of their stability as between 1911 and 1921, we must not expect movements in aggregate activity and movements in physical output to correspond very closely; — though, since our employment figures also in the main exclude activities other than those connected with physical production, this does not matter much for comparisons between production and recorded unemployment. Further, changes in technical efficiency will affect physical production from given numbers employed; so that even here we should not expect close correspondence. Nevertheless, movements in physical production are evidently

of great interest, not only for their own sake, but also for their relation to other movements.

If the quantities of all the various types of goods and services produced in a year varied always in the same proportion, that proportion would show in an unambiguous way how far production as a whole had changed. But when, as, of course, happens in real life, the quantities of different types of goods and services alter in very various proportions, production as a whole becomes a shadowy concept. It is no longer a physical entity susceptible of direct measurement, but an arithmetical concoction, a sum of money divided by an index of prices, or a "quantity" obtained directly by weighting amounts of different kinds of stuff by reference to their prices or to the expenditures upon them over some selected period. Moreover, there are alternative ways of constructing indices of production, just as there are for indices of prices, between which it is not possible to say that this one is right, that one wrong. Over a considerable range the choice can only be arbitrary. Thus the figures, which are offered by statisticians as the best measure they can suggest of changes in production as a whole, are not something absolute, but should rather be regarded as shots, subject to considerable error, fired at a target whose outlines are blurred. None the less, when skilfully contrived, they can be made to provide a very useful, if very rough, picture of the broad trend of events. The discussion which follows must be read in the light of this preliminary caution.

Hoffmann has constructed an annual index for aggregate production in this country over a long period and Mr. Rowe has constructed one from the beginning of 1920. In the following table these two indices are set out along with an index of employment based on the Trade Union figures, the figure for 1913 being represented by 100 in each case. A fourth column gives an annual index of

British exports, as valued at 1913 prices, printed in the Balfour Committee's Report and corrected for 1923 and 1924 to allow for changes of quality. This is, in a sense, an index of the quantity of exports comparable with the indices of production.

Year	Employment Index	Hoffmann's Production Index *	Rowe's Revised Production Index †	Export Index ‡
1913	100.0	100.0	100.0	100.0
1918	..	79.0	..	..
1919	91.4	89.2	..	54.9
1920	99.7	90.5	90.4	70.9
1921	87.0	61.5	66.4	49.8
1922	86.6	76.6	82.5	68.9
1923	90.6	82.9	85.8	74.5 (79.0) §
1924	92.8	88.4	90.7	75.5 (80.0) §
1925	91.4	87.2	89.7	..

\* From *Weltwirtschaftliches Archiv*, September 1934, p. 308. For a note on the relation of this index to Rowe's cf. *post* Appendix, Section II, p. 225.

† London and Cambridge Economic Service *Bulletin*, June 1925, p. 16, with the figures adjusted to 1913=100.

‡ Balfour Committee, *Survey of Overseas Markets*: adjusted by the Committee to allow for the changed status of Southern Ireland and in 1923 and 1924 for quality changes (pp. 3 and 658).

§ Adjusted for quality changes.

The figures so far set out, being for completed calendar years, do not permit us to take account of such facts as that the Boom began in April 1919 and ended in April 1920. It would clearly be useful to have statistics for shorter periods. Besides his annual index, Mr. Rowe has also constructed, from the beginning of 1920, a quarterly index of production. This is based on a narrower range than his annual index; for example, no quarterly index for agriculture is possible, and among minerals only coal is available. Moreover, since the index is mainly based on raw materials imported and passing into the hands of manufacturers, Mr. Rowe suggests that this index may tend to measure the volume of production in the immediate future rather than in the quarter against which the figures are set.<sup>1</sup> Thus for comparison with other series it might

<sup>1</sup> London and Cambridge Economic Service, Memorandum S, p. 11.

sometimes be best to put Mr. Rowe's figures three months forward. In the table below his index is set out alongside of (i) a corresponding quarterly index of employment, and (ii) a corresponding quarterly index of export quantities. Again, all the indices are worked so that the average of 1913 is 100.

QUARTERLY INDICES OF EMPLOYMENT, PRODUCTION AND EXPORTS<sup>1</sup> IN QUANTITIES

Year	Employment	Production	Exports
1913 (average) . . . .	97.9	100.0	100.0
1919 1st quarter )	97.6	..	54.9
.. 2nd .. )			
.. 3rd .. )			
.. 4th .. )			
1920 1st .. . .	98.1	104.9	71.3
.. 2nd .. . .	98.9	101.2	73.5
.. 3rd .. . .	98.3	102.4	73.6
.. 4th .. . .	95.0	92.2	65.4
1921 1st .. . .	91.5	82.9	53.5
.. 2nd .. . .	79.0	47.6	38.4
.. 3rd .. . .	84.0	77.2	46.4
.. 4th .. . .	84.0	62.5	60.7
1922 1st .. . .	83.5	76.3	67.1
.. 2nd .. . .	83.6	78.9	65.0
.. 3rd .. . .	85.5	85.1	69.9
.. 4th .. . .	85.9	83.2	73.3
1923 1st .. . .	89.2	89.2	74.4
.. 2nd .. . .	89.0	89.0	77.6
.. 3rd .. . .	84.7	84.7	68.7
.. 4th .. . .	92.1	92.1	77.5
1924 1st .. . .	89.6	89.6	73.8
.. 2nd .. . .	90.6	90.6	76.7
.. 3rd .. . .	89.6	89.6	69.9
.. 4th .. . .	93.9	93.9	73.3
1925 1st .. . .	91.6	91.6	..
.. 2nd .. . .	..	87.0	..

<sup>1</sup> The table for exports is taken from Pigon and Robertson, *Essays and Addresses*, p. 166, and continued for 1924. In it adjustment is made for the changed status of Southern Ireland after the first quarter of 1923. Professor Robertson's

I add the following table,— due to Hoffmann,<sup>1</sup> — which distinguishes between annual movements in output of producers' goods and of consumers' goods :

* Year	Producers' Goods	Consumers' Goods
1913	100.0	100.0
1919	85.2	93.7
1920	90.6	90.7
1921	57.2	66.0
1922	72.5	81.0
1923	88.8	77.1
1924	94.4	82.6
1925	89.0	85.5

For this table Hoffmann's lists of producers' goods and consumers' goods are respectively as follows : <sup>2</sup>

PRODUCERS' GOODS	CONSUMERS' GOODS
<i>A. Mining</i>	<i>F. Textiles</i>
1. Coal	1. Cotton
2. Iron ore	<i>a.</i> Yarn
3. Tin ore	<i>b.</i> Cloth
4. Copper ore	2. Wool and knitted material
5. Lead ore	<i>a.</i> Wool yarn
6. Zinc ore	<i>b.</i> Woollen cloth and
7. Miscellaneous ores	knitted material

table is constructed in accordance with the method adopted by the Board of Trade. This method, which was a peculiar one, has been summarised for me by Mr. Corlett as follows :

"The method used by the *Board of Trade Journal* for 1920-22 was to value the trade of each year up to the end of the quarter on the basis of the average prices at the corresponding period in 1913. Thus, if  $a_1, a_2, a_3, a_4$  were the quantities in the four quarters of 1920, and the 1913 prices of the commodity were  $p_1, p_2, p_3, p_4$  in the four quarters, the estimate of the trade in the quarters at 1913 prices ( $b_1, b_2 \dots$  being quantities in 1913) would be

- |   |            |
|---|------------|
| (1) $a_1 p_1$   | (3 months) |
| (2) $(a_1 + a_2) \frac{b_1 p_1 + b_2 p_2}{b_1 + b_2} - a_1 p_1$   | (6 months) |
| (3) $(a_1 + a_2 + a_3) \frac{b_1 p_1 + b_2 p_2 + b_3 p_3}{b_1 + b_2 + b_3} - (a_1 + a_2) \frac{b_1 p_1 + b_2 p_2}{b_1 + b_2}$ | (9 months) |
|   | -6 months) |

From 1923 the trade of each quarter was revalued on the basis of prices in the corresponding quarter of the previous year and then related to 1913 through the index for that quarter."

<sup>1</sup> *Weltwirtschaftliches Archiv*, September 1934, p. 398.

<sup>2</sup> *Ibid.* pp. 392-3.

- |  |   |
|--|---|
| <p>PRODUCERS' GOODS—<i>contd.</i></p> <p><b>B. Iron, Steel and Machine Industry</b></p> <ol style="list-style-type: none"> <li>1. Iron and steel</li> <li>2. Manufactured iron and steel products, machines, implements</li> </ol> <p><b>C. Metals and Metal Wares</b></p> <ol style="list-style-type: none"> <li>1. Copper</li> <li>2. Lead</li> <li>3. Zinc</li> <li>4. Tin</li> <li>5. Aluminium</li> <li>6. Metal ware</li> </ol> <p><b>D. Vehicles, Ships, etc.</b></p> <ol style="list-style-type: none"> <li>1. Ships</li> <li>2. Locomotives, etc.</li> <li>3. Tramways</li> <li>4. Motor cars</li> </ol> <p><b>E. Timber and Timber Products</b></p> <ol style="list-style-type: none"> <li>1. Furniture</li> <li>2. Miscellaneous</li> </ol> | <p>CONSUMERS' GOODS—<i>contd.</i></p> <p><b>F. Textiles (contd.)</b></p> <ol style="list-style-type: none"> <li>3. Silk             <ol style="list-style-type: none"> <li>a. Yarn</li> <li>b. Cloth</li> </ol> </li> <li>4. Artificial silk</li> <li>5. Jute and hemp</li> <li>6. Linen</li> </ol> <p><b>G. Food, Drink, Tobacco</b></p> <ol style="list-style-type: none"> <li>1. Flour, bread, cake and pastries             <ol style="list-style-type: none"> <li>a. Flour</li> <li>b. Bread, cake, pastries</li> </ol> </li> <li>2. Meat products</li> <li>3. Confectionery</li> <li>4. Sugar</li> <li>5. Beer</li> <li>6. Malt</li> <li>7. Alcohol</li> <li>8. Tobacco</li> </ol> <p><b>H. Paper and Printing</b></p> <ol style="list-style-type: none"> <li>1. Paper</li> <li>2. Printing</li> </ol> <p><b>I. Leather Products</b></p> <ol style="list-style-type: none"> <li>1. Leather</li> <li>2. Leather work</li> </ol> <p><b>J. Rubber Products</b></p> <p><b>K. Chemicals</b></p> <ol style="list-style-type: none"> <li>1. Alkali and bleaching material</li> <li>2. Soap and candles</li> <li>3. Oil</li> <li>4. Dyes</li> </ol> <p><b>L. Gas and Electricity</b></p> <ol style="list-style-type: none"> <li>1. Gas</li> <li>2. Electricity</li> </ol> |
|--|---|

Hoffmann observes : “ The grouping of industries by reference to producers’ goods and consumers’ goods encounters the well-known difficulty that products of technically

homogeneous industries, as, for instance, the iron and steel industry, are not only sold to enterprises, but to private households as well. Since, in the absence of sales statistics, an exact grouping is impossible, the only way out is a grouping according to the preponderance of the one market or the other. The grouping in the present index is subject to this limitation. Therefore the calculated indices cannot claim complete unambiguity, but they may be taken as an expression of the growth tendencies of the two groups.”<sup>1</sup>

#### I. THE BREATHING SPACE AND THE BOOM

The most striking fact about the foregoing tables is that, according to both Hoffmann's index and Rowe's annual index of production, even in the post-war Boom production was substantially, say 10 per cent, less than in 1913. Some doubt is thrown on this by the fact that Rowe's quarterly index makes 1920 output practically the same as 1913 output. Except for the year 1920, the movements of this index conform broadly with those of the annual index. The discrepancy for 1920 is, however, fully explained in Mr. Rowe's original memorandum as follows: "The quarterly average for Group III is considerably higher than the annual index, partly because no account can be taken of the production of tinsplate and galvanised sheets, which was relatively low, but mainly because the tonnage under construction in ship-building yards was far greater than in 1913, while the tonnage launched was about the same (for the quarterly index the former had to be used, while for the annual the latter can be used, and seemed more appropriate). Agricultural production was low in 1920, and this important group is not, of course, included in the quarterly figures; and the same is true of timber.”<sup>2</sup>

<sup>1</sup> *Loc. cit.* p. 395.

<sup>2</sup> London and Cambridge Economic Service, Memorandum No. 8, p. 14. Group III contains iron and steel, galvanised sheets, railway locomotives, wheels and axles, tinsplates and ship-building.

Clearly, where there is a difference the annual index is to be preferred.

Granted then that production really was lower in the Boom year than in 1913, that fact is *prima facie* surprising and calls for explanation. Can the explanation be that there was a transfer of activity from production, as defined in the index, to other forms of employment? No. For on Bowley's figures it appears that between the Censuses of 1911 and 1921 the number of persons occupied in production proper, *i.e.* in occupations other than transport, commerce, Government service, etc., rose by some 4 per cent, and the number of males by some 7 per cent. The following considerations must, however, be borne in mind. First, while employment in 1913 was very high — the Trade Unions only recorded 2·1 per cent unemployment on the average — in the post-war Boom there was substantial unemployment till the beginning of 1920, and, though a high level of employment was attained in the spring of that year, the Slump followed very quickly; so that, over the Boom year as a whole, April 1919–April 1920, there was a good deal of unemployment. Secondly, the length of the working day was cut down on the average some 10 per cent below its pre-war length, while it may well have been that war weariness reduced the energy of work, and industrial disputes on a heavy scale certainly interfered with it. Finally, equipment had deteriorated during the course of the war, and the shift-over to peace conditions was bound to entail some disorganisation and failure by some managements to arrange work in the most effective way. These considerations taken together will explain a substantial check to immediate post-war, relatively to pre-war, production.

Besides the question how aggregate physical production in the post-war Boom stood in relation to its pre-war level, it is also of interest for our enquiry to know how the



contents of production in the two periods were related to one another. Was the recovery in the output of civilian goods, which followed the return of peace, mainly a recovery for the service of the export market or for the service of the home market? In so far as it was for the service of the home market, what were the respective parts played in it by industries making producers' goods and those making consumers' goods? In so far as the output of consumers' goods expanded, was this mainly for the service of direct consumption or for rebuilding stocks? The data for a complete answer to these questions are not available, but it is possible, nevertheless, to throw some light upon them.

It has always been difficult to disentangle production for export from production for home use. But Sir A. Flux in 1929, in an article in the *Statistical Journal*, calculated, on the basis of the 1907 Census of Production, that at prices ex-factory and ex-farm the share of the gross value of agricultural and manufacturing output entering into exports amounted to 30.5 per cent; in 1900 and again in 1924 the proportion, as reckoned for me by Mr. Rothbarth, seems to have been in the neighbourhood of 25 per cent. In view of the large size of these figures it is evident that a strong revival of the export industries would entail arithmetically, apart altogether from secondary reactions, a substantial revival in production as a whole; a 10 per cent move in exports implying roughly a 3 per cent move in production for export and home use together. Moreover, in the immediate post-war epoch it was in fact to the export industries that many people looked as a dominant field of new civilian activities; attention being focussed on the enormous needs for rehabilitation in many foreign countries alongside of the virtual disappearance of competition in exports from our pre-war rivals. In Part V, Chapter IV, some extracts from the *Economist* will be cited which

illustrate very well this point of view. What actually happened?

Our tables show that the volume of British exports, *i.e.* their money value recalculated at 1913 prices, was 45 per cent less in 1919 than it had been in 1913, and in 1920 nearly 30 per cent less — a much worse showing than is made by the indices of production as a whole. In this connection particular interest attaches to cotton piece goods, partly because exports of these goods constituted before the war a very large fraction — nearly a fifth<sup>1</sup> — of the aggregate value of our recorded exports; partly because the proportion of our output of cotton goods that were exported was very large, — something like three-fourths of the whole, — and partly because the enormous expansion in the *value* of our cotton exports in the immediate post-war period may easily lead us into a serious mistake about quantities. The facts for 1913, 1919 and 1920, the figure for 1913 being put at 100, are as follows :

Year	Value of Exports of Cotton Piece Goods in £ millions	Quantities of these Exports in million yards of Average Width
1913	100	100
1919	183	50
1920	324	66
1921	141	43

Thus the volume of our exports of cotton piece goods exported in 1919 was half, in 1920 just over two-thirds, what it had been in 1913.<sup>2</sup> This is merely a particular illustration of a general truth. Another illustration is afforded by coal. The *value* of our exports in 1919 and 1920 was enormously higher than — in 1920 twice as high as — it had been in 1913, on account of the very high prices at which they were sold; but the *volume* of exports,

<sup>1</sup> *Is Unemployment Inevitable?*, pp. 307 and 318.

<sup>2</sup> For a fuller account of cotton exports cf. *post*, Chapter IV.

which had been 73.4 million tons in 1913, was 35.2 millions in 1919 and only 24.9 millions in 1920.

This summary of relevant facts shows that civilian industrial activity during the Breathing Space and the Boom was not directed to the export market in nearly so high a degree as in 1913. On the contrary, the export market, as compared with pre-war years, recovered substantially less than the home market. At the same time, as our tables show, as between 1919, three parts of which year was in the Boom, and 1920, one quarter of which was in the Boom, exports expanded much more markedly than aggregate production. During the war they had fallen to a very low level indeed. In the first part of 1919 they must have been much less than half, since in 1919 as a whole they were only a little more than half what they were in 1913. Thus, in spite of the fact that at the end of the Boom they did not stand nearly as high relatively to 1913 as aggregate physical production did, nevertheless *during* the Boom year their (geometrical) *rate* of expansion was very rapid, much more rapid than the rate of expansion of physical production as a whole. In this way during the actual course of the Boom itself recovery in the export market was in a sense a dominant fact.

To complete our account of this matter and to guard us against supposing that foreign tariffs were a main source of the misfortunes of our export industry, the following passage from the Introduction to the Report of the Balfour Committee's *Survey of Overseas Markets* (1926) may be cited: "Taken altogether, the average increase of import duties per unit of product has probably not exceeded 80 per cent — a rise not more than sufficient to keep pace with the average rise of price level of the exports. It is a legitimate inference that, taking British trade as a whole, tariff increases since 1913 have not, so far, been an important factor in retarding recovery. . . . While changes in the rates

of Customs duty have not in most cases played an important part in retarding the recovery of British export trade, the same cannot be said of other forms of restriction and obstruction at Customs frontiers."<sup>1</sup> The main forms of obstruction noted by the Committee were Customs prohibitions and restrictions, with the delay caused by licensing, exchange control, and the doubling of the number of independent Customs administrations in Central and Eastern Europe after the war, coupled with the fact that the administration was largely in the hands of comparatively new and inexperienced authorities.

The next question we have to answer is whether the resumption of civilian activity was predominantly in producers' goods, capital goods if we will, or of consumers' goods. To distinguish these two kinds of activity statistically is as difficult as it is to distinguish activity devoted to the home and to the export market. For the line between producers' goods and consumers' goods is not clear.

As regards their relative importance for the country, some guidance may be got from estimates that have been made as to the amount of income that is "invested". Mr. Colin Clark, basing himself on Censuses of Production, gives figures for 1924, which I have combined into the following table :<sup>2</sup>

	<i>£ millions</i>
Investment in fixed capital (net)	235
Additions to working capital	20
Overseas investment (net)	72
Total net income	4035
Maintenance and repair of fixed capital	341

Payments to people making net investment in fixed capital and also payments to those engaged on maintenance and repair are clearly payments received by industries making producers' goods. Together they come to £576 millions.

<sup>1</sup> *Loc. cit.* p. 15.

<sup>2</sup> Cf. *National Income and Outlay*, pp. 88 and 185.

Payments made for consumers' goods include costs of maintenance and repair of fixed capital. Payments made in respect of additions to working capital and of overseas investment may be regarded as distributed between producers' industries and consumers' industries roughly in the same proportion as other payments. Hence the proportion of payments made to producers' industries and consumers' industries respectively in 1924 works out on these estimates at £576 millions against £4035 millions - £576 millions, *i.e.* against £3459 millions. This suggests that in 1924 activity devoted to producers' industries would be somewhere about one-sixth of that devoted to consumers' industries, or about one-seventh of the whole. The corresponding figures for 1907 do not seem to have been seriously different.<sup>1</sup> At all events we have here a rough indication of the comparative orders of magnitude of the two sorts of activity.

There is some evidence, unfortunately not very widely based, to the effect that the upturn took place in industries making consumers' goods a little earlier than in those making producers' goods. This evidence is to be found in Table III of Section II of the Statistical Appendix. In that table Mr. Rothbarth has set out the months in which, according to returns provided by employers and published in the *Labour Gazette*, employment turned upward in a considerable number of industries in both categories. On the average of the dates it appears that consumers' industries turned about the middle of January 1919 and producers' industries near the end of March. Hoffmann's index also suggests that recovery in consumers' goods came first. Thus, with the figure for 1913 put at 100, his index for producers' goods was 85.2 and for consumers' goods 93.7 in 1919, while in 1920 both indices stood approximately at 90½. It is unfortunate that quarterly indices

<sup>1</sup> Cf. *National Income and Outlay*, pp. 94 and 179.

are not available. The implication of the annual figures is, however, fairly clear; consumers' goods began to recover first, but producers' goods presently overhauled them and in the end recovered as far as they did. This order of events is slightly surprising, because, as is well known, output in industries making instrumental goods is in some degree geared, not to the *rate* of output in the consumers' industries, but to *changes* in the rate of that output, so that decreases in the rate at which industries making consumers' goods are decreasing, which in general occur before they have begun absolutely to increase, are liable to be associated with expansions in industries making instrumental goods.<sup>1</sup> What happened may perhaps be accounted for by the fact that the post-war reopening of activity needed a longer period of preparation for many sorts of producers' goods — this was not, of course, true of ship-building — than for most consumption goods.

In a privately printed memorandum, to which I have been given access, the broad relations between movements of industries making producers' and consumers' goods respectively have been described, on a basis, it must be admitted, of general impression rather than of detailed knowledge, as follows: "It is known that large investment was effected by firms, largely out of the amortisation and other reserves they had accumulated during the war, for the adaptation of their plant to civilian demand, to replace worn-out machinery and, in some cases, to expand productive capacity in order to meet an expected increase in demand, which, when it materialised, proved to have a brief span of life. If only on account of the technical difficulties of converting plant and the practical impossibility of anticipating the nature and extent of immediate post-war consumers' demand, this real investment got into full swing rather later than did the manufacture of

<sup>1</sup> Cf. my *Industrial Fluctuations*, Second Edition, p. 110.

consumers' goods."<sup>1</sup> This, I think, probably gives a correct picture of the facts.

There remains the question how far the renewal of activity in industries making consumers' goods during the Boom period was represented by corresponding increases of consumption and how far by the accumulation of new working capital in the form of goods in process assembled inside the machine of industry and in stocks of finished goods in warehouses and shops. There are no statistical data of a general kind bearing upon this question. As regards food, it appears that, while the stocks of tea, coffee and cocoa rose greatly between 1st September 1918 and 1st September 1919 and were at the latter date much above their pre-war level, stocks of wheat (including flour) and barley were at that date decidedly lower both than a year before and than on 1st September 1914; while stocks of oats had fallen as against 1st September 1918, but risen relatively to what they were on 1st September 1914.<sup>2</sup> But this covers only a very small part of the field. On general grounds we can lay it down that an enhanced flow of consumers' goods made at home to consumers' hands can only have taken place on a basis of enlarged working capital in the machine of process and probably also in stocks held by wholesalers and retailers. I myself am inclined to suspect that, while a part of the raised activity in civilian industries during 1919 and the first part of 1920 must have gone to enlarge current consumption, a very large proportion of it was reflected in accumulations of working capital in a wide sense. If this is so, the Boom, in its real, as distinct from its money, aspect, might be described as a Boom in working capital. In view of the fact that business men are apt to rely largely on the banks to finance working, as distinguished from fixed, capital, the

<sup>1</sup> Memorandum prepared by Mr. Loveday, p. 12.

<sup>2</sup> *Ibid.* p. 15.

large increase in bank advances during the period gives some, though perhaps not very strong, support to this view.

## II. THE SLUMP

Both Hoffmann's and Rowe's annual indices of production were very much lower in 1921 than in 1920. The low level was, no doubt, in large part due to the great coal strike from April to June. Their apparent recovery in 1922 was also, no doubt, largely due to the fact that in 1921 they had been on that account abnormally low. In 1922, as well as in 1921, they were both much lower than in 1920, indicating heavy Slump conditions. Rowe's quarterly index began to fall seriously in the last quarter of 1920, thus, as was to be expected, since employment does not yield its fruit immediately, lagging behind the fall in employment. The extraordinarily low figure for the second quarter of 1921 is, of course, accounted for by the coal strike already referred to. In comparing production figures with employment figures for that quarter, it is important to recollect that persons on strike are not counted among the unemployed; a fact which partly accounts for the much slighter relative fall in the employment index. Throughout 1922 till the end of the period which I have called the Slump the quarterly production index remained, like the employment index, very low; though in the last half of 1922 there was an improvement considerably more marked than the accompanying small improvement in the employment index. Throughout the period the larger sweep of the movements of the production index are partly explained by the fact that the employment index for the period, based as it is on the Trade Union returns, takes no account of short time.

In both 1921 and 1922 the annual export index was still substantially more depressed, as against 1913, than the



indices of production ; but the excess depression, especially in 1922, was somewhat less than in 1920.<sup>1</sup> Over the course of the Slump taken as a whole, the decline was predominantly a home market decline. Exports, so far from aggravating, in some measure mitigated the general downward movement.

The evidence of Mr. Rothbarth's table of dates set out in the Appendix, Section II, Table III, suggests that, just as consumers' goods began to recover before producers' goods, so also they began to decline first, on the average by a little over a month. The fall in producers' goods, while beginning later, was, however, more serious. Whereas in 1920 Hoffmann's index (Cf. *ante*, p. 60) for these goods stood at the same level, as against 1913, as his index of consumers' goods, in 1921 and 1922 the two indices stood to one another in much the same relation as in 1919, *i.e.* with the consumers' goods index some 10 per cent higher than the other. Thus producers' goods soon relapsed again after their good year. Throughout the main part of the Slump, as during the earlier stages of the Boom, they were in a substantially worse position as compared with pre-war days than consumers' goods. As between 1921 and 1922 their relative position did not worsen further, but remained fairly steady. Both indices make a substantially better showing in 1922 than in 1921, mainly, no doubt, because in the former year there was no coal strike.

<sup>1</sup> If, instead of the Board of Trade export figures, we use an export index employed by Dr. W. Schlotz (*Entwicklung und Strukturumwandlung des englischen Aussenhandels von 1700 bis zur Gegenwart*, Statistical Appendix), this result is more marked. Putting both production and exports at 100 for 1920, we have

Year	Hoffmann's Production Index	Schlotz's Export Index
1920	100	100
1921	63	71
1922	80	100
1923	98	112
1924	104	116

There is no direct evidence about the state of working capital, including stocks in warehouses and shops, during the course of the Slump ; but it may be presumed on general grounds that the contraction in activity over this period only manifested itself to a relatively small extent in a reduction of current consumption. It was probably mainly associated with a cessation in the process of building up additional working capital.

### III. THE DOLDRUMS

With the ending of 1922 the bottom of the depression was passed. Employment improved and, with it, aggregate production. But in neither case was the improvement large. Throughout our part of the Doldrums, including, if we will, the whole of 1925, Hoffmann's annual index never rose above 88.4 per cent (the figure for 1924) of its 1913 value. Rowe's annual index never exceeded 90.7 per cent (in 1924). His quarterly index reached 90.6 per cent in the second and, after a drop, 93.9 per cent in the fourth quarter of 1924 ; but quickly fell again. As a rough generalisation we may say that in our part of the Doldrums aggregate physical production was some 10 per cent below its 1913 level.

As compared with the Slump years of 1921 and 1922, exports were up somewhat relative to aggregate output, but, as against 1913, they were still relatively down. Thus, as against 1913, weakness in the exports market was still a direct aggravating factor in the general malaise. As already suggested, the relation of exports to production seems to have reverted to what it was in 1900. It is important, however, to realise that a low level of exports, when things had settled down after the Slump, was not something special to England. It was part of a world malady, from which this country suffered actually a little less than others.

The Balfour Committee found that, while the exports of the world reckoned in sterling rose between 1913 and 1923 from £4035 millions to £5299 millions, or 31 per cent, the proportion of British exports to world exports *rose* from 13 to 14 per cent.<sup>1</sup> The practical moral was drawn by Sir A. Flux as follows: "These figures appear to suggest that the restoration of world trade to its former dimensions and capacity of expansion can do more to restore our own export trade and revive the industries that depend on it than a struggle to secure for ourselves trade that has been carried on by some other nation, important as it is to maintain our competitive capacity".<sup>2</sup>

According to Hoffmann's index, during the Doldrums the output of producers' goods expanded greatly relatively to that of consumers' goods. In 1922 the index for these had been 72.5 against a consumers' goods index of 81.0, but in 1923 it had risen to 88.8 per cent and in 1924 to 94.4 per cent, while the index of consumers' goods, after a drop in the intermediate year, stood only a little above what it was in 1922, namely at 82.6 per cent. A natural inference is that during 1923 and 1924 investment in fixed capital of various sorts was going forward strongly,—though it was destined to be checked in 1925, perhaps in connection with the restoration of the Gold Standard, or perhaps, with the tightening-up of bank policy, which, as will be shown in Part V, Chapter I, preceded it. If this is so, we should be inclined *prima facie* to expect a considerable expansion in new capital issues in 1923 and 1924. There was in fact no such expansion either of issues for the home market or in general. However, as Mr. Colin Clark has made clear,<sup>3</sup> these issues are an extremely unreliable index of what is happening to real investment. In

<sup>1</sup> *Survey of Overseas Markets*, pp. 2-3.

<sup>2</sup> *Economic Journal*, 1926, p. 554.

<sup>3</sup> Cf. *National Income and Outlay*, pp. 166-7.

spite of them, therefore, the inference suggested by Hoffmann's figures may, nevertheless, be right.

## IV. CONCLUDING CAUTION

Throughout this discussion, when we have compared the parts played in aggregate changes of production by changes in different elements, notably in production for the export market and production of producers' goods, we have been careful to speak in terms of arithmetic, not of causation. Thus, when we found that a 10 per cent expansion in the export industries would carry with it roughly a 3 per cent expansion in the sum-total of all industries, this was on the understanding that expansion of the export industries left the activity of other industries unaffected. But, of course, in real life, when one branch of industry expands, repercussions on other branches are almost certain to occur. If the whole of a country's resources are fully occupied, an expansion in one branch is bound to entail a contraction in others. But, if substantial quantities of resources are standing idle, such an expansion is very likely to evoke, not a contraction, but an expansion, in other branches. Whether it does this, and, if it does, how large the secondary expansion will be, depends partly on the policy of banks and partly on that of wage-earners. If banking policy is directed to prevent money income from rising, or if, though it allows money income to rise, wage-earners force money wage rates up in equal proportion, repercussions cannot, indeed, occur. But, if bank policy permits money income to rise and wage-earners do not force up money wage rates in an equal proportion, they will occur. The expansion of one branch of industry gives more money to the persons engaged in that branch, while this is not offset, or is only partially offset, by contractions of income elsewhere. The wage-earners in export industries,

or industries making producers' goods, have more money to spend, and thus create a market for the services of other wage-earners. In this way the addition made to aggregate activity may be substantially more than that made to activity in the branch of industry which first started to expand. In some circumstances a cumulative movement may be set up and presently gather strong momentum. The study of these matters lies, however, outside our present scope.